Five-year Review Report

Second Five-Year Review Report
For
Clare Water Supply
City of Clare
Clare County, Michigan

September 2006

PREPARED BY:
United States Environmental Protection Agency
Region 5
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Date:

9-28-06

Five-Year Review Report

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U.S. EPA Region 5 List of Acronyms

ARAR - Applicable or Relevant and Appropriate Requirement
AS - Air Sparging
CD - Consent Decree
CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
CFR - Code of Federal Regulations
CIC – Community Involvement Coordinator
DCE - 1,2-dichloroethylene
EPA - United States Environmental Protection Agency
IC – Institutional Control
ISVE - Insitu vapor extraction
MCL - Maximum Contaminant Level
MDOT – Michigan Department of Transportation
NCP - National Contingency Plan
NPL - National Priorities List
O&M - Operation and Maintenance
PCOR – Preliminary Close Out Report
PRB – Permeable Reactive Barrier
PRP - Potentially Responsible Party
PSD - Performing Settling Defendant
RA - Remedial Action
RAL – Remedial Action Level
RAO - Remedial Action Objective
RD - Remedial Design
RI/FS - Remedial Investigation/Feasibility Study
ROD - Record of Decision
SDWA - Safe Drinking Water Act
TCE - Trichloroethylene
VOC - Volatile Organic Compound

Executive Summary

The remedy for Clare Water Supply Site in Clare, Michigan included wellhead treatment of the municipal well water, in-situ and ex-situ encapsulation of contaminated soils with dual phase vacuum extraction and treatment, active groundwater restoration involving groundwater pumping and treatment by air stripping. The 1992 ROD provided for "deed and/or access restrictions as necessary." The Agency agreed to a sitewide ordinance probihiting well installation in areas of groundwater contamination. U.S. EPA issued a unilateral administrative order (UAO) requiring implementation of this ROD in 1992. Implementation of the 1992 ROD was later incorporated into the terms of a Consent Decree with a group of potentially responsible parties. The site achieved construction completion with the signing of the Preliminary Close out Report on March 31, 1999. The trigger for this five-year review was the previous five-year review in September of 2001.

The assessment of this five-year review found that the remedy was constructed in accordance with the requirements of the Record of Decision (ROD) dated 9/16/1992, as amended in a ROD Amendment (dated 5/15/1997) and most recently Explanation of Significant Differences (ESDs) dated 8/4/1995 and 9/29/2004. The remedy is protective through the ongoing operation of the air stripping system at the water distribution plant, which is a component of the final remedy. Water quality at the impacted municipal wells has improved throughout the operation of the remedy and is at or very close to the cleanup goals. It is likely that the air stripping system will continue to operate for several years after the cleanup goals are achieved in order to provide continuing additional protection to the water supply. It is unlikely that the current remedy in place at the site will reach the groundwater cleanup goals throughout the aquifer system for many years.

Pursuant to the First Five Year Review Report, the potentially responsible party (PRP) for the StageRight facility expanded the ozone sparging remedy to an additional "hot spot" area in 2002. Per the First Five Year Review Report and the ESDs, a group of potentially responsible parties (PRPs) added a permeable reactive barrier (PRB) remedy at another source area, the Mitchell facility, in December 2004, and coordinated replacement of City production well MW-2 in September 2006.

Prior to the 1992 ROD, an interim remedial action was taken in 1990 during conduct of the Remedial Investigation and Feasibility Study in order to protect the municipal water supply from volatile organic compounds that had risen to the level of the Maximum Contaminant Level (MCL) for vinyl chloride. The interim action required the installation of two 25-foot high air stripping towers to treat all of the municipal water prior to distribution. These air strippers have been removing over 97% of the VOCs for over 15 years now. This interim action was taken because the Site was still in the early stages of the RI/FS at the time vinyl chloride was discovered in the drinking water supply. Since the site cleanup was still years away it was necessary to take the interim action to protect the water

supply until the remedial action could be taken and cleanup levels achieved. The interim remedial system was made part of the final Site remedy per the 1992 ROD and 1995 ESD. That remedy is functioning as designed. The immediate threats to drinking water have been addressed and concentrations at supply wells MW-2 and MW-5 continue to decrease over time. Current detections at MW-2 do not exceed MCLs, and current detections at MW-5 only slightly exceed the MCL for TCE. Other aspects of the final remedy include:

- Source area soil - contaminated soils were excavated from the Mitchell facility and transported to a treatment cell area on the Ex-Cell-O property and dual-phase vacuum extraction and treatment have been taking place within that cell since March 1999.
- Sitewide groundwater - a groundwater extraction well (PRP-1) and shallow tray air stripper have been operating at 20 gpm since 1999 in addition to the continued operation of the air strippers treating flow from MW-2 and MW-5.
- Source area groundwater - a PRB was installed at the Mitchell facility in December 2004 to prevent VOCs in groundwater at that source from impacting nearby surface water.

Separately, the PRP for the StageRight facility has been sparging ozone into a TCE plume at nine points in three areas of the site in an effort to reduce the levels of TCE at that location very near municipal well #5.

Other contaminant source areas within the City's Wellhead Protection Area include the former MDOT bulk storage facility, Stanley Oil site, American Dry Cleaners site, and Standard Oil site. One of these source areas, MDOT site, was remediated and closed. The others have had no to minimal assessment or remediation.

Protectiveness Statements

The imminent threats at the site have been addressed and the remedy provides both short and long term protection of human health and the environment because impacted drinking water is being treated via air stripping prior to mixing with unimpacted drinking water for further treatment in the City's public water supply system prior to distribution. Exposure pathways that could result in unacceptable risk are being controlled and are preventing exposure to and ingestion of contaminated groundwater. Long-term protectiveness of the overall groundwater remedial action relies upon the continued operation and maintenance of the air strippers for flow from MW-2 and MW-5 until water quality at those wells is generally below MCLs, after which the City may opt to maintain the air strippers for long term use until all groundwater within the City's Wellhead Protection Area exhibits concentrations generally below MCLs. Long term protectiveness is also dependant upon effective Institutional Controls that are maintained and monitored.

Five Year Review Summary Form
SITE IDENTIFICATION

Site name *(from WasteLAN)*: Clare Municipal Wellfield
EPA ID *(from WasteLAN)*: MID980002273
Region: 5 **State:** MI **City/County:** Clare
NPL status: : Final
Remediation status: Ongoing
Multiple OUs: YES **Construction completion date:** 3/31 / 1999
Has site been put into reuse? YES
Lead agency: : EPA
Author name: Jon Peterson
Author title: Remedial Project Manager **Author affiliation:** U.S. EPA, Region 5
Review period: 8 / 31 / 2001 to September 2006
Date(s) of site inspection: August 29, 2006
Type of review: Post-SARA
Review number: 2 (second)
Triggering action: Previous Five Year Review
Triggering action date *(from WasteLAN)*: 9/28/2001
Due date *(five years after triggering action date)*: 9/28/2006
Background:
The Site is basically the whole City of Clare and there were four primary sources of volatile organic compounds that impacted 2 of the City's 4 municipal supply wells. The four primary source areas were the sludge lagoons and underground storage tanks at the former Mitchell facility, underground storage tanks on the Ex-Cell-O property; gasoline contamination from the Michigan Department of Transportation (MDOT) Railroad Depot area and the former Weltronics (now StageRight) property. The MDOT source area was remediated to below MCLs for benzene, toluene, and xylene which were the only contaminants there and the system has been shut down. The Mitchell area was remediated by removing all the impacted soils and piling them upon contaminated soils at the Ex-Cell-O area. The Ex-Cell-O area contaminated soils were encapsulated by construction of a slurry wall around the entire property and then covered with a RCRA Subtitle D cap. Dual-phase vacuum extraction wells were then installed into this "Treatment Cell" and extraction of vapors and water is ongoing. A permeable reactive barrier was installed at the former Mitchell facility in December 2004, to remediate and prevent migration of a vinyl chloride plume to nearby surface water and to limit additional groundwater impacts. The StageRight area contamination was not discovered until 1999 and the PRP signed an AOC wherein they agreed to conduct a time-critical removal action at the StageRight facility. The PRP has been operating an ozone sparging system on the StageRight facility since May of 2000 and it has reduced the level of groundwater contamination at the ozone sparging points.
Issues:

1) There are exceedances of the GSI standard of 15 ppb for vinyl chloride at some of the monitoring wells around the PRB and the current owner plans facility expansion in the near future which may conflict with additional work that may be required on the PRB.
2) There have been minor exceedances of the MCLs at one of the seven monitoring wells around the soil treatment cell.
3) The source area on the StageRight property still exceeds the RAL for TCE of 300 ppb.
4) The Stanley Oil Company removed two of the monitoring wells and they have a very high level of BTEX in groundwater on and adjacent to their property which lies within the City of Clare's Wellhead Protection Area and there are residential apartments within 100 feet which may suffer vapor intrusion from the contaminated groundwater.
5) The American Dry Cleaners and the former Standard Oil property were never certified closed by the regulatory authorities for Underground and Above Ground Storage tanks and may act as continuing sources of perchloroethene from the Dry Cleaners and BTEX from the former Standard Oil Property to the City of Clare's Wellhead Protection Area.
6) The City of Clare's Public Water Supply is protected by two air strippers and one of the air strippers is not equipped with a heater and thus cannot be used in winter months and the detection limit used for the parameter MTBE is 50 μg/l which is above Michigan's taste and odor criteria of 40 μg/l and California's MCL of 13 μg/l.
7) The PRPs have requested to shut down PRP-1 groundwater recovery well.
8) The soil treatment cell has only access restrictions (fence) around it and no restrictions that run with the land (i.e., Deed Restrictions) and the current access restrictions (site fence) incorporates both land which is available for unrestricted reuse.
9) Evaluate effectiveness of ICs and assure long term stewardship.

Recommendations and Follow-up Actions:

1) Either continue monitoring the PRB and/or conduct MDEQ's tracer test but optimize the monitoring network and plan.
2) Continue monitoring around treatment cell and/or conduct sampling to demonstrate that contained soils have reached adequate treatment levels to decommission and turn off the dual phase vacuum extraction system and put into place deed restrictions on the actual soil treatment cell perimeter to ensure that no one tampers with the contaminated soils contained therein and optimize the monitoring network and plan.
3) Continue ozone sparging on Stageright and optimize monitoring network and plan.
4) Coordinate with Saginaw District Office regarding cleanup of Stanley Oil facility under Michigans 201 program.
5) Coordinate with Michigan's 213 program regarding closure of American Dry Cleaners site and with Michigan's 201 program about closure of former Standard Oil Company Site.
6) Coordinate monitoring plan with City of Clare water treatment plant operator to ensure continuous ability to operate air stripper(s) and ensure adequacy of monitoring plan especially with respect to BTEX and MTBE.
7) Coordinate with PRPs the shutdown and decommissioning of the PRP-1 recovery well.
8) Work with the City of Clare and property owner to determine reuse options for the former Ex-Cello property and evaluate feasibility of reduced operation or shutdown of the soil remedy dual extraction system along with future reuse options for the Ex-Cell-O facility.
9) Complete IC Study and Complete IC Plan.

Protectiveness Statement:
The imminent threats at the site have been addressed and this remedy provides protection of human health and the environment because VOC concentrations in sitewide groundwater have declined over time, the VOC concentrations in MW-2 and MW-5 are below MCLs with one exception only slightly above the MCL (TCE at MW-5), and the groundwater collected by production wells MW-2 and MW-5 continues to be treated by air stripping prior to further treatment, mixing with water from other clean production wells, and distribution for use as drinking water. Long-term protectiveness of the remedial action relies upon the continued operation and maintenance of the air strippers for flow from MW-2 and MW-5 until water quality at those wells is generally below MCLs. The City may opt to maintain the air strippers for long term use until all groundwater within the City's Wellhead Protection Area exhibits concentrations generally below MCLs. Long term protectiveness is also dependant upon effective ICs that are maintained and monitored.

Clare Water Supply Site
City of Clare, Clare County, Michigan
First Five-Year Review Report

I. Introduction

The purpose of this five-year review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and identify recommendations to address them.

The Agency is preparing this Five-Year Review report pursuant to CERCLA § 121 and the National Contingency (NCP). CERCLA § 121 states:

> *If the President selects a remedy that results in any hazardous substance, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*
>
> The Agency interpreted this requirement further in the NCP; CFR §300.430(f)(4)(ii) states:
>
> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less then every five years after the initiation of the selected remedial action.*

The United States Environmental Protection Agency (EPA), Region 5, conducted the first five-year review of the remedy implemented at the Clare Water Supply Superfund Site in Clare, Michigan. The First Five-Year Review Report was dated 9/28/2001; the review was conducted by the Remedial Project Manager (RPM) for the entire site in September 2001 and it covered the time frame from the interim remedial action in 1990 through September 2001.

This is the second five-year review for the Clare Water Supply Site. The triggering action for this review is the signature date of the previous five year review which was September 28, 2001. The five-year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure.

II. Site Chronology

Table 1: Chronology of Site Events

Date	Activity
December 1981 ***Initial Discovery***	The Clare municipal wells were sampled by the Michigan Department of Public Health (MDPH) for organic compounds. The sampling revealed Volatile Organic Compound (VOC) contamination in two of the City's municipal wells.
November 1982 ***Site Scored***	The Clare site was evaluated using the Hazard Ranking System (HRS) and was then proposed to Group 7 of the National Priorities List (NPL).
September 21, 1984 ***Final NPL Listing***	The site was listed as final on the NPL
September 27, 1985 ***AOC for RI/FS***	A Consent Order was signed, binding the U.S. EPA and the PRPs: Colt Industries (now Coltec), Ex-Cello Corporation, Ransburg Corporation (now ITW), and United Technologies Automotive, to complete a RI/FS at the Clare Water Supply field in Clare, Michigan.
September, 1988 ***RI Start***	The Remedial Investigation (RI) was initiated.
August 30, 1990 ***Interim Action ROD***	The sampling results obtained from the RI field work indicated that the levels of vinyl chloride were at times equal to the Maximum Contaminant Levels (MCL) of 2μg/l. Consequently, U.S. EPA prepared an Interim Action Record of Decision (ROD) to treat the water supply by air stripping to be protective until the RI/FS was completed and the overall site remedy implemented.
March 1991 ***Interim RA***	The air strippers were installed and began operating and are consistently maintaining a safe drinking water supply.
September 1992 ***RI/FS Completed and ROD Signed***	The Remedial Investigation and Feasibility Study (RI/FS) came to a close with the signing of a sitewide ROD that provided for soil and groundwater remedial actions. The ROD memorialized the selection of a combined remedy which called for groundwater collection and treatment using Ultraviolet Photochemical Catalytic Oxidation and for in-situ vapor extraction and treatment for the contaminated soils. The combined alternative chosen included use, deed and/or access restrictions as necessary; diversion of the US10 Drainage Ditch around contaminated sediments while the remedial action was being conducted; In-Situ Soil Vapor Extraction (SVE); and ground water extraction and treatment using ultraviolet photochemical oxidation.

Table 1: Chronology of Site Events

Date	Activity
August 1992 ***PRP RD Start***	The USEPA issued a Unilateral Administrative Order (UAO) under Section 106 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund amendments and Reauthorization Act of 1986 (CERCLA) for the Clare Water Supply Site, Operable Unit #2, Clare, Michigan. The UAO required that Potentially Responsible Parties (PRPs) complete the design and implementation of the remedial action selected in the ROD.
January 1995 ***MDOT Facility Biosparging Begins***	The Michigan Department of Transportation (MDOT) began biosparging on the MDOT facility in Clare
August 1995 ***Remedy Modification***	USEPA issued an Explanation of Significant Differences (ESD) which modified the remedy selected in the 1992 ROD for the groundwater portion of the cleanup work in Clare. Basically, this ESD changed the groundwater capture at the site to be accomplished by continuous pumping from two municipal wells (MW-2 and MW-5) at a specified pumping rate and a separate extraction system northwest of MW-5 near the lumber yard. The ESD also changed the selected treatment method for the groundwater from ultraviolet photo-chemical oxidation to air stripping. The selected remedy for the second and final operable unit at the Clare Water Supply Site now called for encapsulation of VOC-contaminated material in a treatment cell on the western portion of the Ex-Cell-O facility with dual-phase vacuum extraction of the contaminated soils and the installation of a recovery well (PRP-1).
May 15, 1997 **ROD Amendment**	The 1992 ROD was amended to change the soils treatment from In-Situ Vapor Extraction to Ex-Situ Encapsulation and Vapor Extraction and new Michigan Part 201 cleanup standards were adopted as appropriate for the Site.
Nov. 9, 1998 **CONSENT DECREE**	Six PRPs enter into Consent Decree to continue implementation of remedial work provided for in September 1992 ROD.
December 1998 **ADMINISTRATIVE ORDER ON CONSENT**	Illinois Tool Works PRP enters into AOC with U.S. EPA to conduct removal activities on what is now called the StageRight facility.

Table 1: Chronology of Site Events

Date	Activity
March 1999 ***PCOR Signed***	The PRPs completed the construction of a slurry wall around the Ex-Cell-O west area. Contaminated soils from the Mitchell property were excavated and placed atop impacted soils in the Ex-Cell-O area within the slurry wall. A solid waste cap was constructed over the entire mass and dual-phase (vapor and water) extraction wells as well as passive vent wells were installed within the treatment cell. A treatment system building was built upon the Excell-o property and vacuum equipment as well as carbon filtration systems for vapor and water were installed within the building.
August 1999	MDOT completes remediation of bulk storage depot area.
May 2000 ***Ozone Sparging at StageRight Facility***	The PRP at the Stage Right facility installed and began operating two loops of 3 ozone sparging points adjacent to the east wall of the building in May of 2000.
September 28, 2001	The first five year review was conducted.
May 2002 Expansion of Ozone	The ozone system at the StageRight facility was expanded to include an additional loop of 3 sparge points.
9/29/2004 ***PRB required***	ESD signed requiring installation of PRB, replacement municipal well, and adjustment of GSI standards for two chemicals of concern.
December 2004 ***Permeable Reactive Barrier (PRB)***	The PRPs installed a Permeable Reactive Barrier (PRB) consisting of two parallel trenches, each 175-foot long, 18-inch wide, installed using a continuous trenching machine. The depth of the PRBs varied from 20-feet on the west side of the property to 16 feet on the east side of the property. The depth of the PRBs was required by USEPA to be such that at least three feet was keyed into the grey till. The goal of this additional remedial action was to degrade Vinyl Chloride within the groundwater to levels below the Michigan Part 201 Ground Water/Surface Water Interface (GSI) standards or below 15 μg/l before it discharged into the drainage ditch or otherwise migrates off the former Mitchell facility property and enters the water supply aquifer.

III. BACKGROUND

Physical Characteristics

The Clare Water Supply is in the southwestern quadrant of the City of Clare, Michigan; in the southeast 1/4 of Section 34, Township 17 North, Range 4 West

of Grant Township, Clare County, Michigan. The Clare Water Supply system withdraws groundwater from four municipal wells (MW) in the area, each tapping an unconsolidated sand aquifer which occurs between approximately 30 to 80 feet below the surface. Two of the wells, MW #2 and MW #5, are located in the northeastern portion of the site. Based on sampling since 1981, these wells have been shown to be contaminated. The contaminants in these wells consist primarily of chlorinated hydrocarbons. Two uncontaminated wells, MW #6 and MW #7, are located generally south and southwest of the contaminated portion of the site, respectively. The Clare Water Supply is the Public Water Supply for the 3,300 residents of Clare, Michigan. This has been found to be the only feasible source of drinking water for the community.

West of the contaminated wells, approximately 14 manufacturing and retail businesses are operating. Several of these facilities may be or may have been the location of contamination source areas. Current or past operations which contributed to the contamination include lagoon disposal, underground and above ground tank storage, and drain tile discharges from two of the facilities. The site is generally bounded to the north by 5th Street (U.S. Highway 10). The western boundary of the site roughly corresponds to the western side of the Mitchell Property, and the wellfield is bounded to the east by Maple Street (Figure 1). The Ann Arbor railroad line traverses the site from the south to north and the C&O Railroad line crosses the site at the northwest edge. The Little Tobacco Drainage ditch flows across the wellfield entering from the southern border of the industrial area located directly west-northwest of the municipal wellfield. The drainage ditch is spring fed before it enters the industrial area and receives input from surface runoff. The flow in this drainage ditch is intermittent and it rarely exceeds a few inches in depth. The drainage ditch empties into a small wetlands area which directly recharges the aquifer in the vicinity of the two contaminated wells. The dashed line on the figure below indicates the general outline of the Clare groundwater contamination.

The site soils create two different hydrologic regimes within the investigation area. The first hydraulic regime consists of a perched water zone created by the low-permeability clay/till unit(s) in the western half of the site. The second is created by aquifer sand underlying till. The aquifer is 20 to 40 feet thick in a sand unit beginning at 30 to 40 feet below the ground surface. In the western, industrialized portion of the site, 30 to 40 feet of clay and glacial till cover the aquifer. In the eastern well field portion of the site, the aquifer sand joins a thick sequence of river channel sands which extend from the ground surface to approximately 80 to 90 feet below ground surface, based on drilling logs.

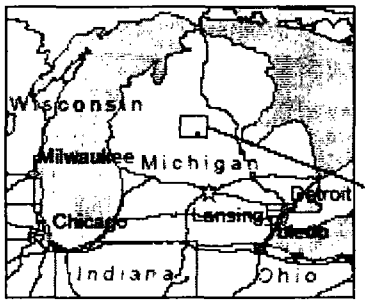
Flow from the drainage ditch infiltrates the soils at the western edge of the well field. On the eastern edge of the wellfield, surface flow from the Little Tobacco drainage ditch joins the Little Tobacco River and continues eastward. Other local surface water includes the Tobacco River, approximately one-half mile north of the well field, and Shamrock Lake, approximately 1 mile northeast of the well site.

Site Location

Superfund
U.S. Environmental Protection Agency

Clare Water Supply
Clare County, MI

MID980002273



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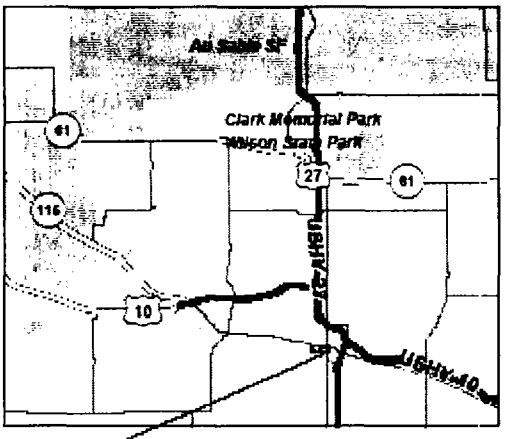
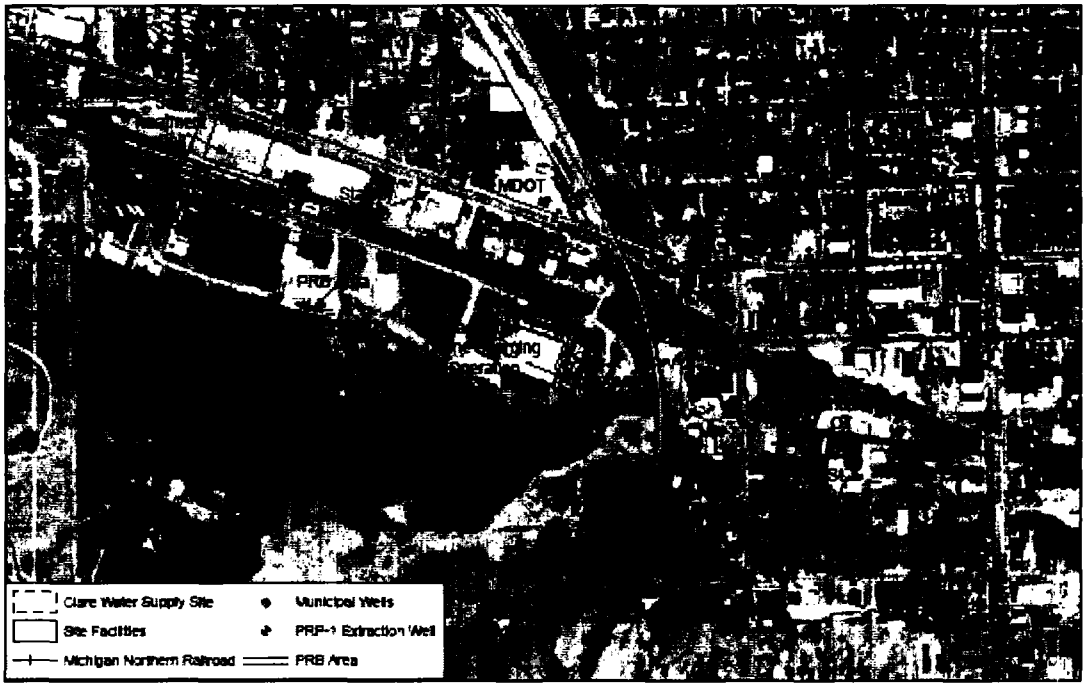


County



Site

Figure 1

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GEOS

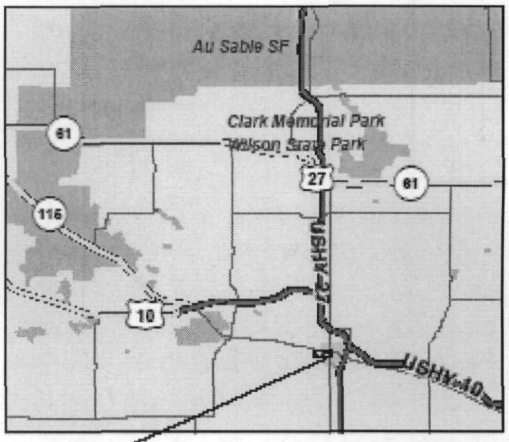
Site Location

Superfund
U.S. Environmental Protection Agency

Clare Water Supply
Clare County, MI

MID980002273

State



County

Site

Figure 1

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GEOS

History of Contamination

In December, 1981, the Clare municipal wells were sampled by the Michigan Department of Public Health (MDPH) for organic compounds. The sampling revealed Volatile Organic Compound (VOC) contamination in MW #2 and MW #5. The contaminants were identified as chlorinated hydrocarbons and included trichloroethene (TCE) and dichloroethene (DCE). The MDPH determined that the aeration process which the city used to remove iron from the drinking water and blending of the water from the contaminated wells (MW #2 and MW #5) with water from the uncontaminated well (MW #6) would effectively reduce the contamination in the water prior to distribution. Testing results indicated that the iron removal aeration treatment removed approximately 67% of the TCE contamination through volatilization during the forced draft aeration (45 parts per billion (ppb) before treatment, 15 ppb after treatment). DCE concentrations were not significantly affected by the aeration (11 ppb before treatment, 10 ppb after treatment). Blending of water from the least contaminated wells facilitated a further reduction in contaminant concentrations within the tap water system. Water was aerated and blended in this manner before delivery until completion of the interim action operable unit which has provided for air stripping of all water pumped from MW #2 and MW #5 since March 7, 1991.

Initial Response

From September 6, 1988 to November 12, 1988, the following Phase I field work was completed by the PRPs: installation of 24 shallow (5-7 feet deep), 11 intermediate (18-47 feet deep), and 4 deep (55-105) groundwater monitoring wells; completion of 41 soil borings; collection of 6 sediment and 12 surface water samples from the Little Tobacco Drainage Ditch; sampling and measuring water levels of all ground-water monitoring wells; and geophysical surveys. This field work was designed to identify the sources of the contaminants, determine the vertical and lateral extent of contamination, locate contaminant migration pathways, and evaluate the public health and environmental risks associated with the site.

Phase II of the Remedial Investigation (RI) field work was conducted from June 13, 1989 to August 16, 1989. Field activities during this period included geophysical surveys, 4 additional shallow ground-water monitoring well installations, 6 additional intermediate depth groundwater monitoring well installations, 10 soil borings, drain tile investigations with 14 test pits, 6 piezometer installations, a 72 hour pump test of the aquifer serving the wellfield, sampling of ground water, 5 surface water samples from the drainage ditch and ground water level measurements.

Remedial Investigation / Feasibility Study

The RI/FS for the Site generally showed that the major sources of soil and groundwater contamination were most likely located directly west of the wellfield in the industrial area and the RI originally broke the Clare Site up into 7 separate

Areas of Concern (AOC) that are depicted on Figure 1: 1) Mitchell Area (now called the PRB area), 2) Ex-Cell-O (now called Soil Remedy Area), 3) MDOT Facility, 4) former Weltronics facility (now StageRight facility), 5) Stanley Oil Area, 6) former Standard Oil property, and 7) American Dry Cleaners. Contaminants were believed to be leaching out of soils on the industrial properties, entering a shallow perched aquifer, and migrating to the deeper aquifer that serves the municipal wellfield. Contaminants appeared to be transported by both surface water (the Little Tobacco drainage ditch) and groundwater flow pathways; although subsequent data indicated generally no surface water impacts.

MITCHELL (PRB) AREA: Two lagoons were formerly located on the south side of the Mitchell property, a larger cooling water lagoon to the east, and a smaller lagoon to the west. The smaller, westernmost lagoon was backfilled sometime between 1964 and 1972. The larger cooling water lagoon was backfilled with sand in 1983. In 1987-88, a source removal action was undertaken by one of the PRPs in this area under an order from the MDNR.

Samples from shallow surface soils were collected during both phases of the field investigation. These include borehole samples and test pit samples collected during the Drain Tile Study, which examined the possible influence of several drain lines on soil contamination in the lagoon area. The highest levels of contaminants were associated with the soils around the drain tiles with trichloroethene as high as 1,100,000 ppb, trans 1,2-dichloroethene as high as 350,000 ppb. For more information on the soil contamination at the Mitchell area refer to Table 1 in the ROD and the Drain Tile Study which is Appendix 1 of the RI report.

The most highly contaminated groundwater under the Mitchell property was found at a depth of approximately 60 feet beneath the old lagoon area with trichloroethene as high as 4,600 ppb. Wells located just upgradient of the lagoon area at the same depth showed only low levels of contaminants. The 60 foot depth at this location coincides with the top of the lower aquifer on the western portion of the Clare Water Supply Site.

EX-CELL-O (SOIL REMEDY) AREA: Twenty-two soil samples from above the till unit were collected on the Ex-Cell-O property, and seven samples were collected north and west of the Ex-Cell-O property. The highest levels of contaminants were located in shallow surface soils at borings taken just adjacent to the Ex-Cell-O building and under it with levels of trichloroethene in soil as high as 37,000 ppb and Xylenes as high as 31,000 ppb at a depth of 3 feet.

All wells in the vicinity of the Ex-Cell-O building were completed within or above the till unit. This discussion of ground water quality concerns only the perched water present above the clay. The highest levels of contaminants were found at 4-7 feet below the surface just south of the Ex-Cell-O building with trichloroethene as high as 20,000 ppb.

STANLEY OIL AREA: Soil samples were collected from borings during both phases of this investigation. A total of four such samples were collected from shallow soils in the Stanley Oil area. The highest level of chemicals found in these soil samples were Naphthalene at 7,000 ppb, xylenes at 3,600 ppb, toluene at 12 ppb, and methylene chloride at 18 ppb.

A total of four monitoring wells were installed in the immediate vicinity of the Stanley Oil area. The highest level of contaminants were found at 3-6 feet below the surface immediately adjacent to the aboveground storage tanks with benzene at 1,600 µg/l, ethylbenzene at 170 µg/l, xylenes at 1,000 µg/l, toluene at 42 µg/l, and methylene chloride at 7 µg/l.

MDOT AREA: Ground water samples were collected in the Ann Arbor Railroad depot area from three monitoring wells installed during the RI. The following compounds were detected in these monitoring wells: ethylbenzene at 460 µg/l, toluene at 310 µg/l; xylenes at 4,400 µg/l; trichloroethene at 7 µg/l; and methylene chloride at 4 µg/l.

Soil samples collected and analyzed by the MDNR in 1982 and 1983 in the MDOT area found soils to contain: ethylbenzene at 9,000 ppb, xylene at 90,000 ppb, toluene at 5,000 ppb, carbon tetrachloride at 410 ppb, and perchloroethane at 260 ppb.

WELTRONICS (STAGERIGHT) AREA: Fifteen soil samples were collected in the vicinity of the Weltronics building. The soils were found to contain up to: 130 ppb of trichloroethene, 57 ppb of toluene, 12 ppb of methylene chloride, and 110,000 ppb of bis(2-ethylhexyl)phthalate.

Thirteen ground water monitoring wells, three piezometers, and MW #5 are located in the vicinity of the Weltronics building. In 1988, some of the wells installed in this area showed that contaminant concentrations decreased with depth. For example, well WS-5 contained 1,1-dichloroethane, trans-1,2-dichloroethene, trichloroethene and vinyl chloride totaling 308 µg/l in 1988. Well WD-5 installed at approximately the same location but with a screen depth 25 feet below that of WS-5 contained no chlorinated hydrocarbons above detection limits. In 1989, WS-5 concentrations had all dropped below detection limits, while well 211, which was screened approximately 10 feet deeper than WS-5 at approximately the same location contained 1,1-dichloroethane, vinyl chloride, 1,2-dichloroethene and 1,1,2-trichloroethane totaling 222 µg/l.

AMERICAN DRY CLEANERS AREA: The MDNR collected a composite sample of the upper 12 inches of the soil profile from immediately behind the American Dry Cleaners back door in 1982 which contained xylene at 18,000 ppb, tetrachloroethene at 200 ppb, and carbon tetrachloride at 40 ppb. A groundwater sample was collected during the RI from the monitoring well installed on the property by the MDNR in 1982. The analytical results of this water sample revealed: 9 ppb of trans 1,2-dichloroethene, 84 ppb of tetrachloroethene, and 2 and 1 parts per billion of trichloroethene and methylene chloride, respectively.

An underground storage tank was removed from behind this building in 1989 under Michigan's Leaking Underground Storage Tank program.

STANDARD OIL AREA: Unsaturated zone soil samples were collected from 4 borings in the Standard Oil Area. These revealed the presence of ethylbenzene at 26,000 ppb and xylenes up to 120,000 ppb in the unsaturated zone. Soil samples were also collected from two monitoring wells in this area. One sample from 47 feet depth contained trichloroethene and perchloroethene, the sum of which was 166 ppb. A deeper soil sample from a 75 foot depth contained no compounds of concern above detection limits.

Groundwater samples were collected from 4 monitoring wells in this area. Analysis results for these wells show trichloroethene up to 220 µg/l, trans-1,2-dichloroethene up to 85 µg/l, and vinyl chloride and perchloroethene were detected at concentrations below 5 µg/l.

Basis for Taking Action

It was determined in 1989 that the public water supply for the City of Clare had been contaminated with chlorinated hydrocarbons at concentrations that were equal to the MCL and would probably increase to exceed the MCLs if no action were taken.

An immediate threat to human health was present because the public water supply was being impacted by a number of source areas and despite the City's blending and aeration of the water the MCLs that apply to the Public Water Supply were being exceeded. The source areas for chlorinated hydrocarbons (Mitchell, Ex-Cell-O, Weltronics) undertook response activities pursuant to the Superfund Program whereas the American Dry Cleaners facility undertook a tank removal under the State of Michigan's UST regulations in 1989 and the Stanley Oil and Standard Oil facilities were to be addressed pursuant to Michigan's Above Ground Storage Tank regulatory authorities.

The 1992 ROD provided for cleanup of contaminated groundwater ultimately to achieve MCLs and Michigan's groundwater criteria (then Act 307) and it also included Michigan's GSI criteria (as To-Be-Considered) in areas where groundwater discharged to surface water.

IV. REMEDIAL ACTIONS

USEPA prepared an Interim Action ROD in August of 1990 to provide wellhead treatment of the water supplied by municipal wells 2 and 5 until the Remedial Investigation/Feasibility Study (RI/FS) was completed and the overall site remedy implemented. The ROD selected air stripping of the city water supply as the preferred remedy for the interim action. The air strippers were installed and began operating in March of 1991 and have been removing over 97% of the volatile contaminants from the City's water supply.

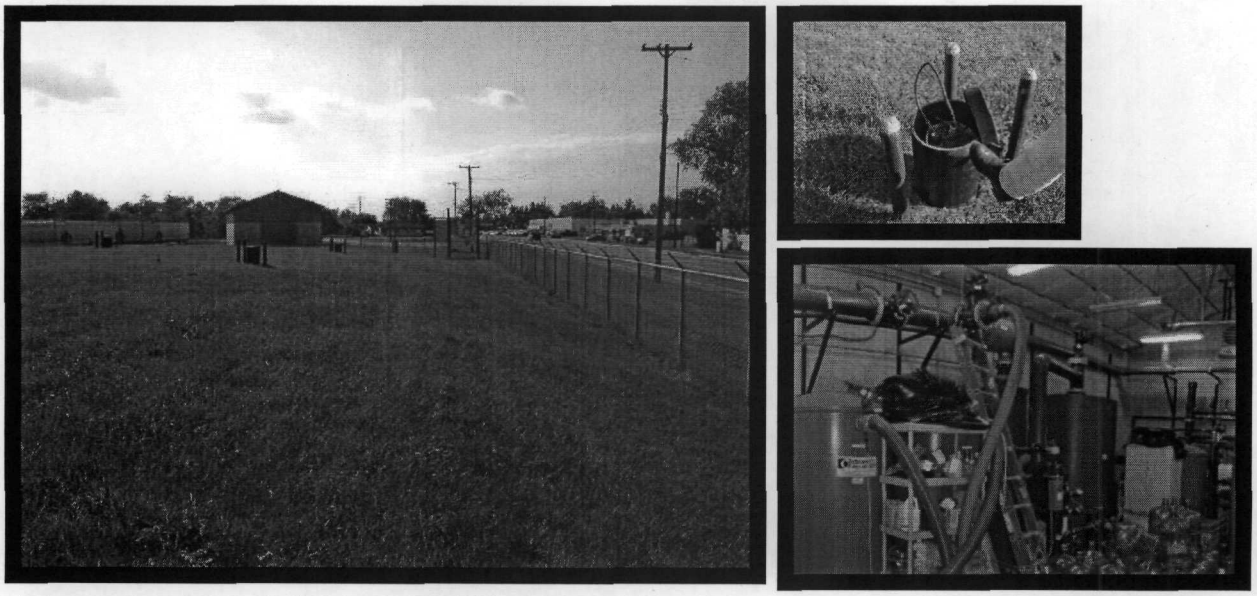
Remedy Selection

USEPA prepared a second Record of Decision on September 16, 1992, and made minor changes to this ROD via an Explanation of Significant Differences on August 4, 1995, and a ROD amendment on May 15, 1997, which addressed both soils and groundwater contamination with chlorinated hydrocarbons at the site. The 1992 ROD provided for a combined soil and groundwater activities and provided for "deed and/or access restrictions as necessary." This was later addressed by enacting a City Ordinance which prohibited the installation of wells in the areas of groundwater contamination.

Soil Remedy Implementation

The 1992 ROD called for excavation of contaminated soil from the Mitchell facility and the eastern portion of the Ex-Cell-O facility, consolidation of excavated materials on the western portion of the Ex-Cell-O facility; construction of a vertical barrier or slurry cutoff wall extending down to the impermeable till located 10 to 20 feet below the ground around the area on the western portion of the Ex-Cell-O facility which is to be the "treatment cell". Construction of a cap which is equivalent to that required for a solid waste landfill in Michigan over the top of the treatment cell. Dual-phase vacuum extraction of contaminated soils within the treatment cell. Installation of a ground water monitoring system. Maintenance of an inward hydraulic gradient within the treatment cell. Continuous operation of the vacuum extraction system until asymptotic conditions are achieved in the extracted soil vapors; or until operation of the system provides limited or no effect on the degradation or removal of the constituents of concern remaining within the encapsulated area. After this period, pulsed operation of the system shall be performed until it can be shown that the system will not provide any further removal of contaminants from the encapsulated area.

The PRPs completed construction activities in March of 1999. A slurry wall was constructed around the Ex-Cell-O west area. Contaminated soils from the Mitchell property were excavated and placed atop impacted soils in the Ex-Cell-O area within the slurry wall. A cap was constructed over the entire mass and dual-phase (vapor and water) extraction wells as well as passive vent wells were installed within the treatment cell. A treatment system building was built upon the Ex-Cell-O property and vacuum equipment as well as carbon filtration systems for vapor and water were installed within the building. The dual phase vacuum extraction wells were then all tied into the treatment building. The VOC removal rates have reached asymptotic levels in both groundwater and vapor



Photos by John Spielberg, MDEQ

In addition to the activities prescribed in the ROD, the PRPs undertook additional activities that were based upon new information that arose during the remedial action. The PRPs couldn't reach soil cleanup levels in very deep soils (38 feet deep) in a small area on the Mitchell property. These soils were saturated and since the PRPs were very close to scraping the top of the confined aquifer below this depth, they could not continue excavation any further due to artesian conditions present in the aquifer. U.S. EPA requested that they install a sump in this small excavation so that we could at least extract the contaminated groundwater from this area in the future. The PRPs did install a sump and two monitoring wells at slightly different depths so that we could monitor the groundwater buildup in the sump and extract it as needed.

Additionally, the PRPs located an area of slightly impacted soils which was just outside the slurry wall footprint but it could not be excavated because of proximity to the adjacent railroad tracks. They installed a dual phase vacuum extraction well at this point to address the contaminated soils.

A slurry wall was installed around this area and 12 dual phase vacuum extraction wells were installed within the encapsulation cell and a treatment system was constructed to treat the extracted vapors and groundwater using granular activated carbon.

The soil remedy was constructed in 1999, and the dual extraction system commenced operation in April 1999. The dual extraction system remains in operation on a cyclic basis, with routine groundwater monitoring at select wells within and outside the containment area, and treatment system discharge monitoring as required per an Industrial User Permit (IUP) with the local wastewater treatment plant.

Groundwater Remedy Implementation

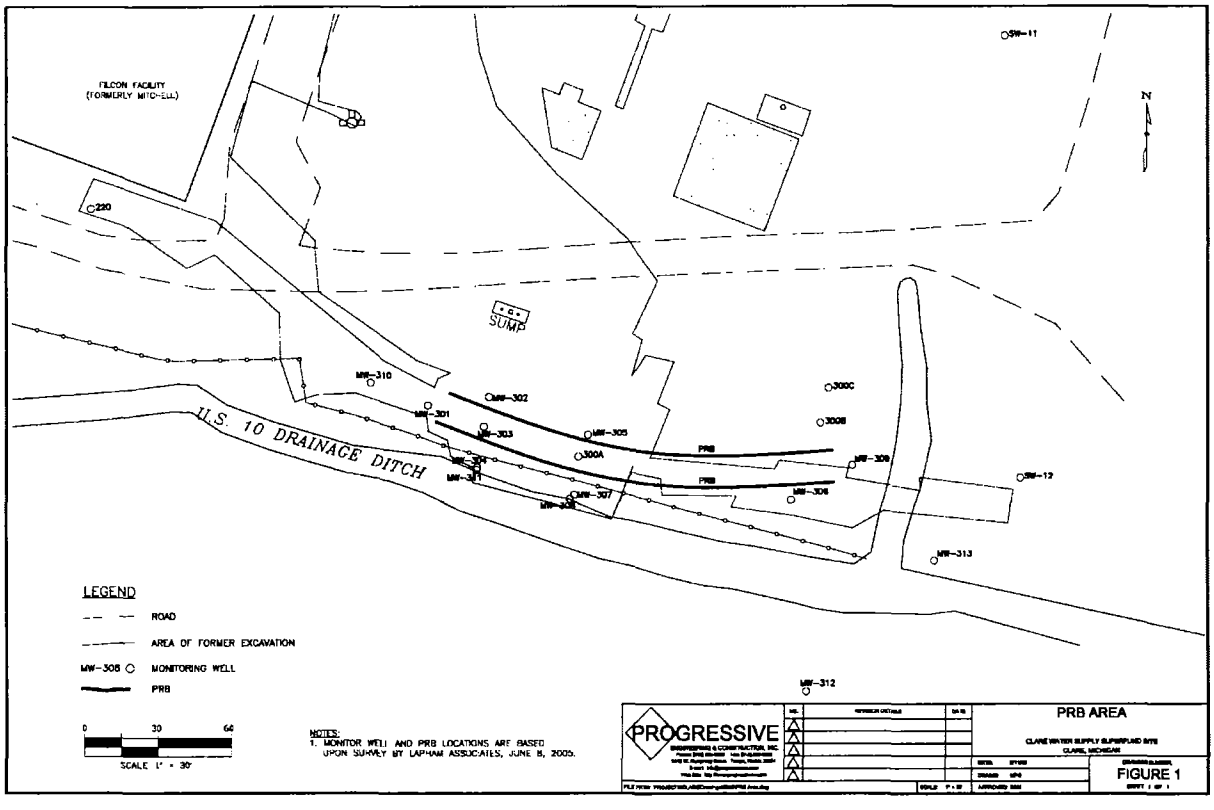
The groundwater remedy provided for in the 1992 ROD consisted of modifying the Interim Remedy to allow continuous operation of MW-2 and MW-5, with groundwater treatment in the packed tower air strippers (configured in parallel), conveyance of treated water to the City drinking water treatment system and/or direct discharge to a nearby creek via a Substantive Requirements Document (SRD) issued by the MDEQ. The Final Groundwater Remedy requires groundwater to be extracted for effective capture of impacted groundwater. In order to maintain a containment zone and to maximize the volume of water treated, variable frequency drives (VFDs) were installed to maintain a minimum rate of pumping from the city water supply wells, MW-2 and MW-5, to ensure capture of groundwater impacts. The pumping rate of MW-2 and MW-5 vary during non-demand times and during demand times when the city water supply is calling for water. When the city water supply is not calling for water and the reservoirs are full, the treated groundwater overflows to the Little Tobacco Joint Drain. In order to address the deed and/or access restrictions called for in the 1992 ROD, the PRPs and the USEPA agreed upon a City wide ordinance prohibiting the installation of wells in areas of groundwater contamination.

Operations of the Groundwater Remedy have focused on maintaining and monitoring capture of the impacted groundwater plume, ensuring reliable operations of the groundwater extraction and treatment systems and semi-annual monitoring of the concentrations of chlorinated hydrocarbons in the groundwater. The modified pump and treat system commenced operation in September 1996. The groundwater remedy also included installation of a groundwater extraction well (PRP-1) and treating the extracted water with a low profile air stripper. Treated water is discharged to the Little Tobacco Joint Drain via the SRD provided for the Site. This system commenced operation in September 1996.

Institutional Controls - During Consent Decree negotiations for implementation of the 1992 ROD, U.S. EPA and the settling PRPs agreed to pursue discussions with the City of Clare requesting it to enact a general well field protection ordinance in lieu of deed restrictions for the entire site. Though the City of Clare was not a PRP, it agreed to enact an ordinance creating a wellfield protection area that encompassed the Site boundaries in response to the PRPs request. Such an ordinance was subsequently enacted and can be found at Sec. 46-322. The ordinance is still in place and it prohibits well installation within the specified Site boundary.

Permeable Reactive Barrier (PRB) – Pursuant to an ESD signed on 9/29/2004, the PRPs installed a Permeable Reactive Barrier (PRB) in December 2004. The PRB for this site was installed as two separate 175-foot long, 18-inch wide trenches using a continuous trenching machine. The depth of the PRBs varied from 20-feet on the west side of the property to 16 feet on the east side of the property. The depth of the PRBs was required by USEPA to be such that at least three feet was keyed into the grey till.

This PRB was backfilled with iron-impregnated carbon coated silica sand (ICS) material. The location of the PRB is shown on the figure below. The goal of this additional remedial action required of the PRPs was to degrade VOC's within the groundwater to levels below the Michigan Part 201 Ground Water/Surface Water Interface (GSI) standards because this is the area on site where groundwater discharges to surface water..



The PRB was constructed in December 2004. Routine monitoring is performed at select wells up and downgradient of the PRB to assess progress toward cleanup.

Stage Right Facility Ozone Sparging – In January 1997, additional investigation activities were conducted on the StageRight facility known as Weltronics in the Remedial Investigation. The hydropunch samples and monitoring wells detected trichloroethene below the northeast corner of the StageRight building. The contaminants of concern were detected in a thickness of 5 – 8 feet at a depth of approximately 10 – 15 feet below the water table. Due to the thinning and pinching out of an upper till unit located west of the StageRight facility, the groundwater in the vicinity of the facility and to the east of the facility is under unconfined conditions within the sand aquifer with a flow direction to the east/southeast. Pumping of municipal well (MW) - 5 to the east of the facility increases the groundwater gradients in this area towards the municipal well.

Pursuant to an Administrative Order on Consent for a Time Critical Removal Action, the PRP at the Stage Right facility installed and began operating ozone sparging adjacent to the east wall of the building in May of 2000. By 2002, the

levels of TCE in the original source area had been reduced from 3300 ppb to 200 ppb. However, at monitoring well MW-3-99, located about 100 feet to the east of MW-1-97, elevated levels of TCE were subsequently identified; the PRP added three sparging points in this area in June 2002.

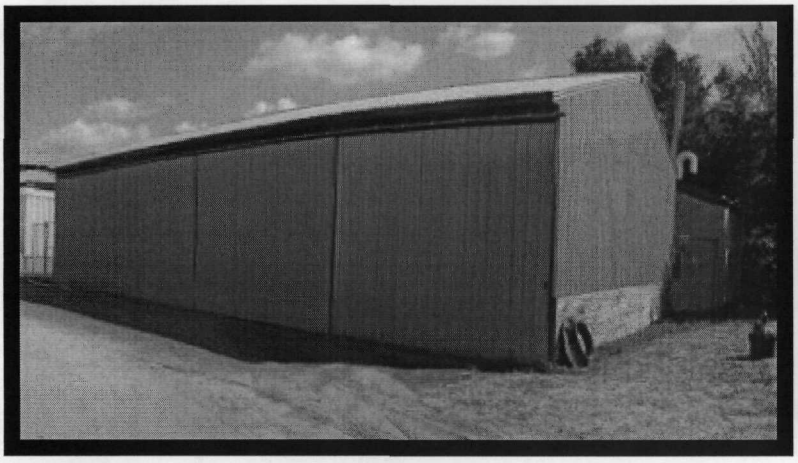
Progress Since Last Five-Year Review (if applicable)

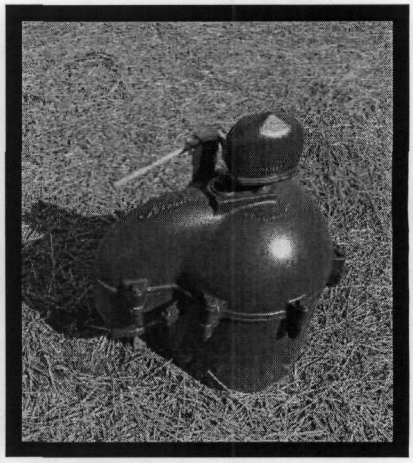
The previous Five Year Review in September of 2001 identified issues of high levels of vinyl chloride in groundwater in the Mitchell area and high levels of TCE in another area on the StageRight facility located near MW-3-99. The issues, recommendations and actions taken since that five year review were:

1) Implement additional ozone sparging at StageRight near MW-3-99 and the PRP added three sparging points in this area in June 2002.

2) Implement additional remedial action activities in the Mitchell Area and a Permeable Reactive Barrier was constructed in December 2004 where routine monitoring is performed at select wells up and downgradient of the PRB to assess progress toward cleanup

In addition, a subsequent ESD issued in 2004, required replacement of City production well MW-2. The replacement well, MW-8, was brought online in September 2006 and is shown in the photos below.





Photos by John Spielberg, MDEQ

V. FIVE YEAR REVIEW PROCESS

Administrative Components

The USEPA had the lead role in executing the five year review. The MDEQ supported the USEPA in this five year review. Potentially Responsible Parties and their consultants have worked very hard to support the USEPA's Five Year Review. The members of the review team included:

- USEPA RPM: Jon Peterson
- USEPA CIC: Robert Paulson
- USEPA Attorney: Thomas Kenney

- MDEQ PM: John Spielberg
- MDEQ Engineer: Mark Henry
- MDEQ Geologist: Barb Vetort
- City of Clare: John Holland and Ken Hibl
- PRP Consultant: Bridget Morello, Matt Gorman, and Dave Cook of Progressive Engineering & Construction
- PRP Consultant: Mike Hoffman and Tony Wlodarski of MACTEC Engineering and Consulting, Inc.
- USEPA GEOS Team: David Wilson, Julie Schilf, Sarah Backhouse

Community Notification and Involvement

A public meeting was held in Clare on April 25, 2005 to, among other things, announce the start of the Five Year Review at the Clare Site. A start notification was issued for the April 25, 2005 meeting and another was published announcing the completion of the five year review process and availability session for August 29, 2006.

Site Inspection

On August 29, 2006, the USEPA, MDEQ, PRP Consultants and the City of Clare Water Treatment Plant Operator inspected all remedial activities undertaken at the Clare Site, including but not limited to: the PRB area; the soil treatment cell, building, equipment, extraction wells, cap and the fence at the former Ex-Cell-O property; the Stanley Oil Company and the adjacent Shamrock Square apartments; old municipal well #2 and the replacement well, MW-8, Municipal Well #5 pumphouse and pump records; ozone sparging and monitoring locations at the StageRight facility; treatment system for PRP-1 recovery well; and surface modifications behind the StageRight facility which included extension of an access road.

On the evening of August 29, 2006, the USEPA, MDEQ, PRP Consultants, and City of Clare Water Treatment Plant Operator, held a public availability session which then continued as a work session on the five year review. The public citizen that attended the meeting was from the Shamrock Square Apartments and was very concerned about the Stanley Oil cleanup.

During the morning of August 30, 2006, the USEPA, MDEQ, PRP Consultants, and the City of Clare Water Treatment Plant Operator held a work session to work on the Five Year Review analysis for the Site. During the afternoon of August 30, 2006, the MDEQ staff John Spielberg and Mark Henry, accompanied by the Water Treatment Plant Operator, searched for and documented the location and condition of all Site monitoring wells. The results of the monitoring well survey are included in Attachment A.

Document Review

Documents reviewed for this five-year review are referenced in Attachment B.

Data Review

Refer to the Technical Assessment Portion of this five-year review for more detailed information and to Attachment 3 for a list of documents reviewed.

Institutional Controls:

Institutional Controls (ICs) are non-engineered instruments, such as administrative and legal controls that help to minimize the potential to exposure to contamination and that protect the integrity of the remedy. ICs can be required to assure long-term protectiveness for any areas which do not allow for unlimited use or unrestricted exposure (UU/UE

The 1992 ROD provided for "deed and/or access restrictions as necessary." The Statement of Work attached to the UAO requiring implementation of this ROD provided for the implementation of institutional controls through the use of deed restrictions as necessary. During Consent Decree negotiations for implementation of the 1992 ROD, U.S. EPA and the settling PRPs agreed to pursue discussions with the City of Clare requesting it to enact a general well field protection ordinance in lieu of deed restrictions for the entire site. Though the City of Clare was not a PRP, it agreed to enact an ordinance creating a wellfield protection area that encompassed the Site boundaries in response to the PRPs request. Such an ordinance was subsequently enacted and can be found at Sec. 46-322. The ordinance is still in place and it prohibits well installation within the specified Site boundary. In addition, pursuant to provisions of the Safe Drinking Water Act, the city has developed a Well Head Protection Program that regulates well installations, including at the site. This program provides added protection against unauthorized well development within the site.

Within six months, we will complete an IC study and develop an IC Plan to guide further actions concerning appropriate ICs for this site. The following table provides those areas which will be reviewed for further action under the plan.

Areas (Areas that do not allow unlimited use or unrestricted exposure until Performance Standards are Met)	**Institutional Control Objective /Restriction/Performance Standard**
Soil treatment cell on the former Ex-Cell-O property (see Figure 1)	prohibit interference except maintenance
Treatment building adjacent to Soil treatment Cell and access drive, PRP-1 Recovery Well, water pump and treat system, PRB area	prohibit interference with the system/ maintenance required Allow for additional work in the area to the east of the existing PRB.
Stage Right ozone generators and sparge loops	prohibit interference with the system/ maintenance required
Area of the Site where the groundwater plume exceeds performance standards *(See Figure 1)*	prohibit consumptive use of the groundwater plume area until performance standards are achieved.

Under the plan, several activities will be recommended for completion including the following.

We are currently providing for the creation of a map that depicts the areas where use restrictions are appropriate until the RAOs are met. The IC maps, once completed ,will be made available on EPA's Superfund Data Management System (SDMS) and will serve as an additional IC as an informational control.

A review of the effectiveness of the existing ordinance will be provided for in the IC Plan.

With the creation of the Soil Treatment Cell on the former Ex-Cell-O property and implementation of other aspects of the remedy, deed and/or access restrictions may be necessary to protect the integrity of the remedy that are not addressed by the above-referenced ordinance since it only limits well development. Currently, a fence exists around the entire former Ex-Cell-O property (parcel Number 051-034-301-09 owned by the PRP created ENPRO Industries) which provides a measure of short term protection of the integrity of the remedy by preventing anyone from tampering with or compromising the cap on the cell or the extraction wells or any component of the treatment system as long as the fence is maintained. As part of the IC Plan, a review of whether a Deed Restriction should be place on the parcel the soil treatment cell is located on, or any other location within the site, in order to protect the integrity of the remedy in the long term.

In order to ensure that the appropriate individuals in the City of Clare are aware of Site specific concerns, including use restrictions and progress with site

remediation, we also recommend that a communications plan be developed.

Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

This Five Year Review covers remedial actions that were required to be undertaken pursuant to the Superfund program for chlorinated hydrocarbon contamination at the 1) Mitchell Area (now its called the PRB area), 2) the Ex-Cell-O area (now called Soil Remedy Area), 3) former Weltronics facility (now StageRight facility), 4) the Public Water Supply, and 5) PRP-1 Groundwater Recovery well and the associated treatment system. The source areas for chlorinated hydrocarbons (Mitchell, Ex-Cell-O, Weltronics) undertook response activities pursuant to the Superfund Program whereas the American Dry Cleaners facility undertook a tank removal under the State of Michigan's UST regulations in 1989 and the Stanley Oil and Standard Oil facilities were to be addressed pursuant to Michigan's Above Ground Storage Tank regulatory authorities.

1) PRB Area: The objective of the PRB is to achieve Groundwater Surface water Interface (GSI) levels once the water passes through the PRB. There are 5 monitoring wells directly downgradient from the PRB. The GSI standard of 15 ppb for vinyl chloride was initially exceeded (in May 2005) at four of those wells located on the western portion of the wall, MW 304, MW 307, MW 311, and MW 308, and three wells (MW 304, MW 308 and MW 311) continue to slightly exceed the GSI but the concentration trend is stable and not increasing. The other downgradient well, located in the eastern portion of the PRB, MW 306, was equal to the GSI of 15 ppb for vinyl chloride GSI of 15 ppb (in May 2005) but levels have since decreased to below the GSI standard. This data suggests that the western 60 feet of the PRB is not meeting the GSI standards, but since the trend is stable the results could be indicative of residual contamination that is not moving rather than PRB failure. The eastern 115 feet of the wall is performing as intended. The monitoring point at the eastern end of the wall, MW 309, slightly exceeds the 15 ppb level for vinyl chloride but the trend is stable, which suggests that the wall was not extended far enough to the east, but vinyl chloride has not been detected at the next nearest monitoring wells, MW-313 and SW-12. On the western end of the PRB, the closest monitoring well, MW-301, has only had low detection whereas the well located approximately 30 feet to the west of that, MW-310, is exceeding the 15 ppb level and there is no trend. This suggests that the PRB should have been extended to the west because there is residual contamination in that area. Overall, the concentrations in the vicnity of the PRB has decreased based upon monitoring from May 2005 through May 2006, and data from downgradient monitoring wells demonstrate that the plume is not

migrating offsite.

2) Ex-Cell-O: The ROD required that an inward hydraulic gradient be maintained and that perimeter monitoring take place. The review indicates that at times an inward hydraulic gradient is not maintained everywhere within the soil treatment cell. MCLs are only being exceeded at one (1) out of the seven (7) perimeter monitoring wells, but that well, DMW-3S, shows a downward concentration trend. The dual extraction system has effectively reduced soil vapor and groundwater concentrations to asymptotic conditions; and ongoing pulsed operation has not provided any substantial removal of contaminants from the encapsulated area. Overall, the monitoring results indicate that the soil treatment cell is retarding the migration of contaminants from this area of concern and the overall intent of this remedial action component is being achieved. USEPA, the City and the property owner are exploring reuse options for this site in order to restore it to beneficial use; evaluation of reuse options will involve consideration of further reduced/pulsed operation, remedy shutdown, and/or demolition of the dual extraction system and cap/slurry wall. For the soil treatment cell, an enforceable deed restriction that "runs with the land" must be recorded in the chain of title for the remedy to be protective in the long term.

3) StageRight: The ozone sparging was able to reduce the levels of TCE to below the Removal Action Level of 300 ppb at the source area but when turned off, levels rebounded. The monitoring results from another location, near MW-3-99, have shown concentration reductions from the sparging, but not to concentrations below the RAL. The monitoring wells between the StageRight source area and the municipal wells are not exceeding RALs for this time critical removal action and the concentrations show decreasing trends, however, the concentrations at these wells do exceed the MCLs.

4) Municipal wells: The air strippers have maintained the drinking water standards for the municipal water supply from MW-2 and MW-5 since 1991. This component of the remedy is effective as long as the air strippers are maintained. The system successfully treated recovered groundwater to acceptable levels for discharge. No discharge (Substantive Requirements Document) limits were exceeded. The total mass of VOCs removed by the system during 2005 was approximately 26.97 pounds. A total of approximately 296.7 pounds of VOCs have been removed since September 1996. Few major operational problems were encountered during 2005, and each problem was rectified within an acceptable time period. The majority of system downtime was attributed to air stripper tower maintenance and electrical repairs. At the time of the 5 year review inspection, the water treatment plant operator, John Holland, informed the five year review team that the strippers are operated alternately to allow for

optimum iron control on the stripper media. One stripper is off to allow it to dry so that the iron accumulated on the media can dry out and be washed off and he also advised us that only one of the air stripper towers is equipped with a heater and can be used in the winter months.

5) PRP-1 Groundwater Recovery Well and treatment system: The total mass of VOCs removed by recovery well PRP-1 in 2005 was only 0.14 lbs. Based upon historical performance data, water quality trends and hydraulic data, the PRP-1 recovery well appears to have accomplished its purpose of expediting remediation of shallow/intermediate groundwater impacts.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

The City of Clare has to comply with the Federal MCLs for the drinking water that it supplies to the public. The MCLs for Contaminants of Concern have not changed since the time of the ROD and are still valid.

Several of the GSI values, which apply to the PRB area, have changed and USEPA adopted these new values in a previous ESD, but the GSI value for vinyl chloride (15 ppb) has not changed and is still valid.

The Removal Action Level for TCE of 300 ppb still applies to the ozone sparging at StageRight because this work was conducted as a Time Critical Removal Action via an Adminstrative Order on Consent (AOC).

Some states have promulgated MCLs for Methyl Tertiary Butyl Ether (MTBE), trimethylbenzenes, and 1.4-Dioxane for which there are no federal MCLs. While Michigan is not one of those, the State of Michigan has been increasingly asking public water supplies to monitor for these compounds. These compounds are monitored for in the Clare Public Water Supply but the Detection Limits for MTBE being used by and for the City of Clare's Public Water Supply is 50 μg/l whereas the MCL promulgated in the State of California is 13 μg/l. Michigan apparently has a Taste and Odor value of 40 μg/l for MTBE under Section 201. It is unlikely that the current detection limit of 50 μg/l would be sufficiently low to alert the public water supply to the presence of MTBE contamination before it is already at levels that have been deemed unsafe for human consumption in the State of California.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

Overall, the remedy is made protective by continuous operation and maintenance of the air strippers for the water supplied by municipal wells

2 and 5. Concentrations at MW-2 and MW-5 have been decreasing over time; current detections at MW-2 do not exceed MCLs, and detections at MW-5 which does exceed the MCL of 5 ppb for TCE have declined from an average level of 15 ppb for TCE in 1996 and declined further to an average of 9 ppb in 2001 and declined further to average about 6 ppb at the time of this review.

The Stanley Oil Company has been conducting a cleanup pursuant to Michigan's 201 program to address contamination from leaking above ground storage tanks. During soil removal activities in July 2006, Stanley Oil Company removed two of the monitoring wells that had been installed during the Clare RI/FS (SW13 and 213). The PRPs had sampled SW13 in May 2006 and found a very high level of benzene in that well, 4200 ppb. See Attachment C for Stanley Oil property sampling results provided by MDEQ Saginaw District Office courtesy of Amanda Armbruster.

There are two potential threats to the protectiveness of the remedial actions in Clare associated with the Stanley Oil Company contamination: 1) the presence of hydrocarbons in groundwater within the City of Clare's Wellhead Protection Area and, 2) potential for vapor intrusion. There are residential apartments located no more than 100 feet from the former location of these monitoring wells and the groundwater is only 2 feet deep under these apartments. There is no concrete slab under these apartments, there are wood floors that are about 2 feet above a dirt floor with an enclosed crawl space. It is likely that there is groundwater that exceeds the MCL for benzene (5 ppb) underlying these apartments and there is a potential for indoor vapor intrusion.

No action was ever taken under Superfund at the former Standard Oil property nor the American Dry Cleaners. Contamination from these areas appears to have impacted groundwater east-northeast of the City production wells, and in particular production well MW-2 (replaced with new well MW-8 in September 2006).

Technical Assessment Summary

The technical assessment conducted for this five year review concludes generally that the remedy was constructed in accordance with the requirements of the Record of Decision (ROD) dated 9/16/1992, as amended in a ROD Amendment (dated 5/15/1997) and most recently Explanation of Significant Differences (ESDs) dated 8/4/1995 and 9/29/2004. The most stringent of the Remedial Action Objectives are the MCLs for the Public Water Supply and these are still valid. There are still sources of contamination in the vicinity of two of the the City of Clare's municipal wells and actions to address these sources are in progress. Overall, the remedy is protective because the municipal well water is treated by air stripping system at the water distribution plant, prior to distribution and the air strippers are able to maintain compliance with MCLs. Water quality at the impacted municipal wells has improved throughout the operation of the

remedy and is at or very close to the cleanup goals. It is likely that the air stripping system will continue to operate for several years after the cleanup goals are achieved in order to provide continuing additional protection to the water supply. It is unlikely that the current remedy in place at the site will reach the groundwater cleanup goals throughout the aquifer system for many years.

Issues

Issues identified during the technical assessment and other five-year review activities:

ISSUES	**Affects Current Protectiveness**	**Affects Future Protectiveness**
PRB AREA OF CONCERN: There are exceedances of the GSI standard of 15 ppb for vinyl chloride at some of the monitoring wells around the PRB, but there is no evidence of off-site migration, and detections could be indicative of residual impacts.	N	N
SOIL TREATMENT CELL AREA OF CONCERN: There have been minor exceedances of the MCL for TCE at one of the seven monitoring wells around the soil treatment cell. However, operational and monitoring data suggest that the dual extraction system has effectively reached asymptotic conditions for soil vapor and groundwater, and continued operation will likely not achieve any appreciable contaminant reduction. Additionally, the fence around the entire former Ex-Cell-O property does prevent anyone from tampering with the remedy in the short term but a deed restriction on the soil treatment cell itself could protect the integrity of the containment area in the long term.	N	N
STAGERIGHT AREA OF CONCERN: The source area on the StageRight property still exceeds the RAL for TCE of 300 ppb.	N	Y
STANLEY OIL AREA OF CONCERN: The Stanley Oil Company recently destroyed two of the monitoring wells installed by others during the RI/FS and several other site wells which had very high levels of BTEX present in groundwater on and adjacent to that property which lies within the City of Clare's Wellhead Protection Area. There are residential apartments within 100 feet which may suffer vapor intrusion from the contaminated groundwater.	Y	Y
AMERICAN DRY CLEANERS AREA OF CONCERN: The American Dry Cleaners and the former Standard Oil property were never remediated and they are potential sources of chlorinated VOCs and BTEX. Both of these source areas lie within the City of Clare's Wellhead Protection Area.	N	N
PUBLIC WATER SUPPLY AREA OF CONCERN: The sitewide groundwater monitoring plan should be optimized and updated to ensure adequate frequency and number of sample locations for effective evaluation of progress toward cleanup.	N	Y

ISSUES	Affects Current Protectiveness	Affects Future Protectiveness
PRP-1 GROUNDWATER RECOVERY WELL AND TREATMENT SYSTEM: The PRPs have requested that the PRP-1 remedy be shutdown and decommissioned since water quality data have reached asymptotic concentrations below MCLs, no appreciable mass of contaminants would be removed by continued operation and maintenance, and any low level residual impacts in the vicinity of PRP-1 are within the capture zone of the overall groundwater remedy (MW-2 and MW-5 air strippers).	N	N
The Institutional Controls need to be evaluated for their effectiveness and there is no plan to ensure long term stewardship for ICs.	N	Y

Determination of whether issues affect current or future protectiveness:

The exceedances of the GSI standard at the PRB does not affect the current or future protectiveness because there is no evidence of offsite migration or elevated levels of VOCs at monitoring wells downgradient of the PRB, and the overall groundwater remedy (air strippers treating MW-2 and MW-5 assures compliance with the SDWA.

The minor exceedances of the MCLs at one of the seven monitoring wells around the soil treatment cell do not affect the current or future protectiveness of the remedy because the concentrations are stable and not increasing, and the overall groundwater remedy (air strippers treating MW-2 and MW-5) assures compliance with the SDWA.

The exceedances of the RAL at the StageRight property do not affect the current protectiveness of the remedy because overall groundwater remedy (air strippers treating MW-2 and MW-5) operated by others assures compliance with the SDWA. However, the RALs are much higher than MCLs and even when the removal action achieves the TCRA objectives, groundwater contamination will remain in close proximity to MW-5 at levels above MCLs. In November 2005 the reuse report for the Clare Water Supply site (ATTACHMENT D) highlighted key considerations, opportunities, and challenges that the City of Clare, U.S. EPA and MDEQ will need to understand if future use of the site is to occur. The Ex-Cell-O portion of the site was identified to have the most potential for reuse.

The BTEX contamination associated with the Stanley Oil Company potentially affects the current protectiveness of the residents at the apartments adjacent to Stanley Oil site. Recent destruction and non-replacement of monitoring wells along the property boundary and offsite to the south and east especially in areas of historically high BTEX levels make judgment of current and long term protectiveness of groundwater difficult. Further investigation of soil and groundwater, well installation and monitoring by the Stanley Oil site owner,

and remedial actions are recommended and necessary in order to determine whether this source area is impacting site-wide groundwater. In the meantime, the overall groundwater remedy (air strippers treating MW-2 and MW-5) operated by others assures compliance with the SDWA.

The potential contribution of chlorinated VOCs and BTEX from the American Dry Cleaners and the former Standard Oil property do not affect the current protectiveness of the remedy since the overall groundwater remedy (air strippers treating MW-2 and MW-5) operated by others assures compliance with the SDWA. However, concentrations in groundwater at MW-2 and between MW-2 and these source areas exceeds MCLs and represents the highest concentrations in non-source area groundwater sitewide. Such concentrations could require use of the MW2/5 air strippers longer than otherwise needed to address concentrations in groundwater west of MW2/5. The parties responsible for these source areas should be required to further investigate and remediate their source areas.

The City of Clare's Wellhead Protection Plan makes no mention of the ordinance that was entered pursuant to the Consent Decree which states..."No person shall be issued a permit for a private well upon any lands located within the Clare Well Field Protection Area." This absence does not affect the protectiveness of the remedy because the City of Clare's Wellhead Protection Plan is a broader program that operates in parallel with the ordinance. The Plan provides for a thorough review if an additional groundwater source or an existing groundwater source has been modified in a manner to increase its capacity or to discharge to the system which would include a draft delineation and preliminary potential contaminant source inventory for each well site being considered. A determination of the appropriateness of new wells using the most current MDEQ delineation guidance will occur and the Plan proscribes that in all cases a competent hydro-geological firm will evaluate the effect of the new well on the existing WHPA geometry and orientation.

Recommendations and Follow-up Actions

Issue	Recommendation	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness	
					C	F
1	Optimize the monitoring plan for the Site	PRP	USEPA \ MDEQ	January 2007	N	Y
2	For the soil treatment cell on the excello property, work with the City of Clare and property owner to determine reuse options for the former Ex-Cello property. Reduced operation or shutdown of the soil remedy dual extraction system and/or demolition of the cap/slurry wall also will be evaluated as part of the reuse evaluation.	PRP	USEPA \ MDEQ	January 2008	N	Y

Issue	Recommendation	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness	Issue
3	Optimize the monitoring plan for the Site	PRP	USEPA \ MDEQ	January 2007	N	Y
4	Coordinate with the MDEQ Saginaw Office project manager, currently Amanda Armbruster, regarding enforcement of the Michigan Part 201 requirements for assessment and remediation of soil and groundwater impacts at and downgradient of that source area. This effort is being coordinated by the RPM, currently Jon Peterson, and is expected to be completed in the next 6 months.	USEPA / MDEQ	USEPA \ MDEQ	January 2007	N	Y
5	Coordinate with the MDEQ project manager, currently John Spielberg, regarding enforcement of the Michigan Part 213 requirements for assessment and remediation of soil and groundwater impacts at and downgradient of the former American Dry Cleaners and enforcement of the Michigan Part 201 requirements for assessment and remediation of soil and groundwater impacts at and downgradient of the former Standard Oil source areas.	USEPA / MDEQ	USEPA \ MDEQ	January 2007	N	Y
6	Work with the City of Clare Public Water Supply to optimize the operation and maintenance of the water supply wells and air strippers.	City of Clare	USEPA \ MDEQ	January 2007	N	Y
7	Shutdown and decommission PRP-1 recovery and treatment system	PRP	USEPA \ MDEQ	January 2007	N	N

Issue	Recommendation	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness	
8	Preparation of an IC Study and long term IC Plan that includes a schedule for completion of the following activities: Evaluation of the effectiveness of existing governmental controls to ensure that groundwater use, and the installation of groundwater wells, is restricted to the appropriate degree until such time that groundwater standards are achieved; Preparation of accurate maps (paper and GIS versions) that depict areas of the Site where U.S. EPA, in consultation with MDEQ, determines that land and/or groundwater use restrictions are necessary; Identification of areas within the Site at which use restrictions may be necessary to ensure long-term protectiveness of the remedy; Conducting title search activities at identified properties, including providing for surveys and research of title documents, by PIN number(s); Development of a strategy for negotiating with the PRPs for the preparation and recording of appropriate Declaration(s) of Restrictive Covenants and Environmental Easements, running with the land and enforceable under Michigan law; and Revision to the O&M Plan to include mechanisms to ensure regular review of the ICs at the Site, annual certification to U.S. EPA that ICs are in-place and effective, and development of a communications plan.	PRP	USEPA \ MDEQ	March 2007	N	Y

The optimization of the site monitoring plan should be done such that we will be made aware of a significant flux of contaminants from the areas where Superfund actions were taken, which includes the soil treatment cell, the PRB

area, and the StageRight area. Modify the monitoring plan to include sufficient alerts of a major flux of contaminants from the areas where Superfund actions were not taken including the Stanley Oil Company, the American Dry Cleaners and the former Standard Oil locations. Such monitoring would be completed by the parties responsible for those source areas, not the other PRPs. The optimized groundwater monitoring plan will be designed to verify that concentrations of target compounds above cleanup standards are not migrating significantly towards the municipal wells. The optimization effort also will identify monitoring wells suitable for abandonment. This effort is being coordinated by the RPM, currently Jon Peterson, and is expected to be completed in the next 3 months.

Protectiveness Statements

The imminent threats at the site have been addressed and the remedy provides both short and long term protection of human health and the environment because impacted drinking water is being treated via air stripping prior to mixing with unimpacted drinking water for further treatment in the City's public water supply system prior to distribution. Exposure pathways that could result in unacceptable risk are being controlled and are preventing exposure to and ingestion of contaminated groundwater. Long-term protectiveness of the overall groundwater remedial action relies upon the continued operation and maintenance of the air strippers for flow from MW-2 and MW-5 until water quality at those wells is generally below MCLs, after which the City may opt to maintain the air strippers for long term use until all groundwater within the City's Wellhead Protection Area exhibits concentrations generally below MCLs. Long term protectiveness is also dependant upon effective Institutional Controls that are maintained and monitored.

Next Review

The next 5 year review will be completed by September 2011.

ATTACHMENT A

Table showing the results of the field survey of all monitoring wells conducted as part of this Five Year Review. The field survey was completed by John Spielberg and John Holland

GROUNDWATER MONITORING LOCATIONS
Clare, Michigan

Area	WellID	Field confirmation notes by John Spielberg	Labelled?	Locked?	Photo?
Groundwater	102	Found, checked on field map	?	?	no
Groundwater	103	Found	?	?	blurry
Groundwater	104	Found	yes	yes	yes
Groundwater	108	Found	?	?	yes
Groundwater	109	Found	?	?	yes
Groundwater	110	Found	?	yes	yes
Groundwater	111	Found	yes	?	yes
Groundwater	210D	Found	?	no	yes
Groundwater	210S	Found	?	no	yes
Groundwater	211	Found	?	?	yes
Groundwater	213	Stanley Oil area, not found, destroyed?			no
Groundwater	215	Found, checked on field map	?	?	no
Groundwater	216	Found	?	?	yes
Groundwater	219	Found	yes	yes	yes
Groundwater	MW-2	Found		yes	yes
Groundwater	MW-5	Found		yes	yes
Groundwater	MW-6	Found		yes	yes
Groundwater	Mw-7	Found		yes	yes
Groundwater	P-201	Found	? (not 10/26/04)	yes	blurry
Groundwater	P-202	Found (cover damaged as of 10/26/04)	?	?	blurry
Groundwater	P-203	Found	no	yes	blurry
Groundwater	P-204	Found	yes	yes	yes
Groundwater	P-205	Found	yes	yes	yes
Groundwater	PRP-1	Found	no	?	yes
Groundwater	SW-13	Stanley Oil area, not found, destroyed?			no
Groundwater	SW-2	Found	?	?	yes
Groundwater	SW-23	Found	?	?	yes
Groundwater	SW-25	Found, flush mount	?	?	yes
Groundwater	SW-28	Found	?	?	yes
Groundwater	SW-5	Found	?	yes	yes
Groundwater	SW-9	Found, Ex-Cell-O area	yes	yes	yes
Groundwater	W-1	Found	yes	yes	yes
Groundwater	W-14	Not found			
Groundwater	W-2	Found	yes	no	yes
Groundwater	W-20	Not found			
Groundwater	W-6	Found	?	?	yes
Groundwater	W-7	Found, by tree	? (not 10/26/04)	?	yes

Groundwater	W-9	Found, by American Dry Cleaners	?	?	yes
Groundwater	WD-10	Found	yes	yes	Blurry
Groundwater	WD-21	Found	yes	yes	Yes
Groundwater	WD-5	Found	?	no	Yes
Groundwater	WD-8	Found	?	?	Yes
Groundwater	WS-10	Found	yes	yes	Blurry
Groundwater	WS-21	Found	yes	yes	Yes
Groundwater	WS-5	Found	?	?	Yes
Groundwater	WS-8	Found	?	?	Yes
Groundwater	105-S	Found - damaged, needs repair, resurvey	?	no	Yes
Groundwater	106D	Found	yes	yes	Yes
Groundwater	106-S	Found	yes	yes	Yes
Groundwater	107D	Found	?	?	Blurry
Groundwater	107-S	Found	?	?	Blurry
PRB	220	Found	?	yes	Yes
PRB	300A	Did not check, but shown in photos of PRB area	?	?	Yes
PRB	300C	Found	?	?	Yes
PRB	MW-301	Did not check, but shown in photos of PRB area	?	?	Yes
PRB	MW-302	Did not check, but shown in photos of PRB area	?	?	Yes
PRB	MW-303	Did not check, but shown in photos of PRB area	?	?	Yes
PRB	MW-304	Did not check, but shown in photos of PRB area	?	?	Yes
PRB	MW-305	Did not check, but shown in photos of PRB area	?	?	Yes
PRB	MW-306	Did not check, but shown in photos of PRB area	?	?	Yes
PRB	Mw-307	Did not check, but shown in photos of PRB area	?	?	Yes
PRB	MW-308	Did not check, but shown in photos of PRB area	?	?	Yes
PRB	Mw-309	Did not check, but shown in photos of PRB area	?	?	Yes
PRB	MW-310	Did not check, but shown in photos of PRB area	?	?	Yes

PRB	MW-311	Did not check, but shown in photos of PRB area	?	?	Yes
PRB	MW-312	Did not check, but shown in photos of PRB area	?	?	Yes
PRB	MW-313	Did not check, but shown in photos of PRB area	?	?	Yes
PRB	SW-11	Found	?	yes	Yes
PRB	SW-12	Found	yes	yes	Yes
PRB	300B	Found	?	?	Yes
Soil	DMW-1D	Found, Ex-Cell-O area	?	yes	Yes
Soil	DMW-1S	Found, Ex-Cell-O area, flush mount in grass	?	?	No
Soil	DMW-2D	Found, Ex-Cell-O area	?	yes	Yes
Soil	DMW-2S	Found, Ex-Cell-O area, flush mount in grass	?	?	No
Soil	DMW-3D	Found, Ex-Cell-O area	?	yes	Yes
Soil	DMW-3S	Found, Ex-Cell-O area, flush mount in grass	?	?	No
Soil	UMW-1D	Found, checked on field map	?	?	No
Soil	UMW-1S	Found, flush mount in grass	?	?	Yes
Stageright	MW-1-01	Found - flush mount cover not bolted down	no	?	Yes
Stageright	MW-1-02	Not checked			
Stageright	MW-10-97	Not checked			
Stageright	MW-1-97	Not checked			
Stageright	MW-1-99	Not checked			
Stageright	MW-2-01	Not checked			
Stageright	MW-2-99	Not checked			
Stageright	MW-3-01	Not checked			
Stageright	MW-3-99	Not checked			
Stageright	MW-5-97	Not checked			
Stageright	MW-6-97	Not checked			
Stageright	MW-7-97	Not checked			
Stageright	MW-8-97	Not checked			
Stageright	P-202	See Groundwater Area			
Stageright	MW-4-97	Not checked			
not on list	W-13	Found, but not on field map, N of PRP-1			Yes

Note: last four columns added by MDEQ; also last row

ATTACHMENT B

List of documents reviewed as part of this Five Year Review

USEPA, Preliminary Closeout Report, March 1999

Environmental Science and Engineering, Inc., **Time Critical Removal Action Work Plan StageRight Facility-Clare Water Supply Site,** April 2000.

Mactec Engineering and Consulting, Inc., **Progress Reports for June 1998 through May 2006**.

SECOR, **Engineering Evaluation / Cost Analysis,** January 10, 2003.

SECOR, **Design Report for the Installation of a Permeable Reactive Barrier at the Clare Water Supply Site**, November 2004.

SECOR, **Workplan for the Installation of Permeable Reactive Barrier Monitoring Wells for Clare PRP Group**, April 2005.

SECOR, **Semi-Annual Monitoring Reports and Progress Reports for various remedial systems 2001 – 2005,** various dates.

SECOR, **Documentation Report for the Installation of a Permeable Reactive Barrier for the Clare PRP Committee**, Clare, Michigan; June 2005.

Progressive Engineering and Construction, Inc., **Quality Assurance Project Plan for the Clare Water Supply Superfund Site, Clare, Michigan**, November 30, 2005.

Progressive Engineering and Construction, Inc., **Final Minutes of the 4/26/05 Site Meeting and 4/29/05 Followup Conference Call**.

Progressive Engineering and Construction, Inc., **Project Progress Reports for April through July 2006, various dates**.

Progressive Engineering and Construction, Inc., **Summary of May 2005 PRB Area Monitoring Well Installation Activities**, July 21, 2005.

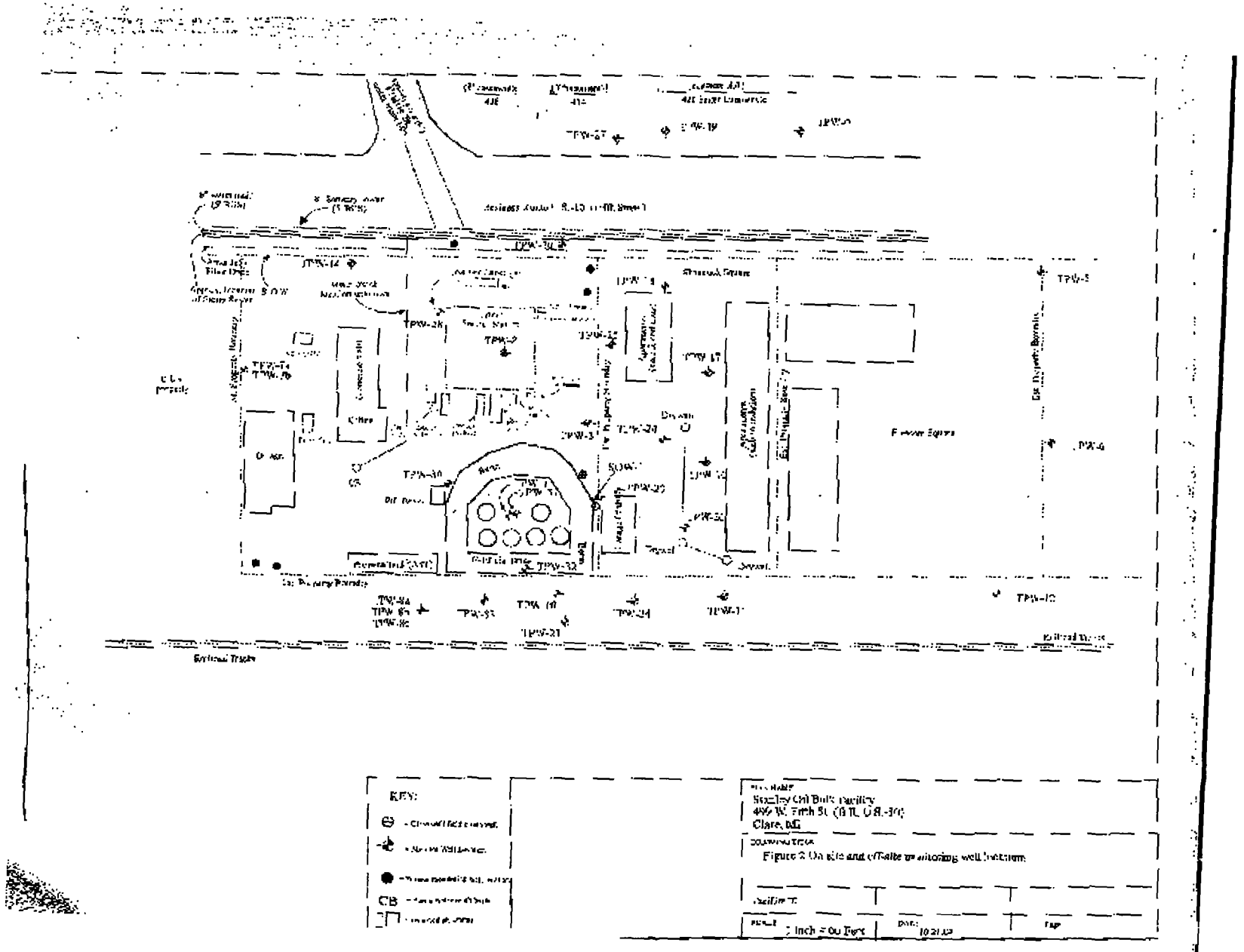
Progressive Engineering and Construction, Inc., **2005 Annual Monitoring Report**, March 3, 2006.

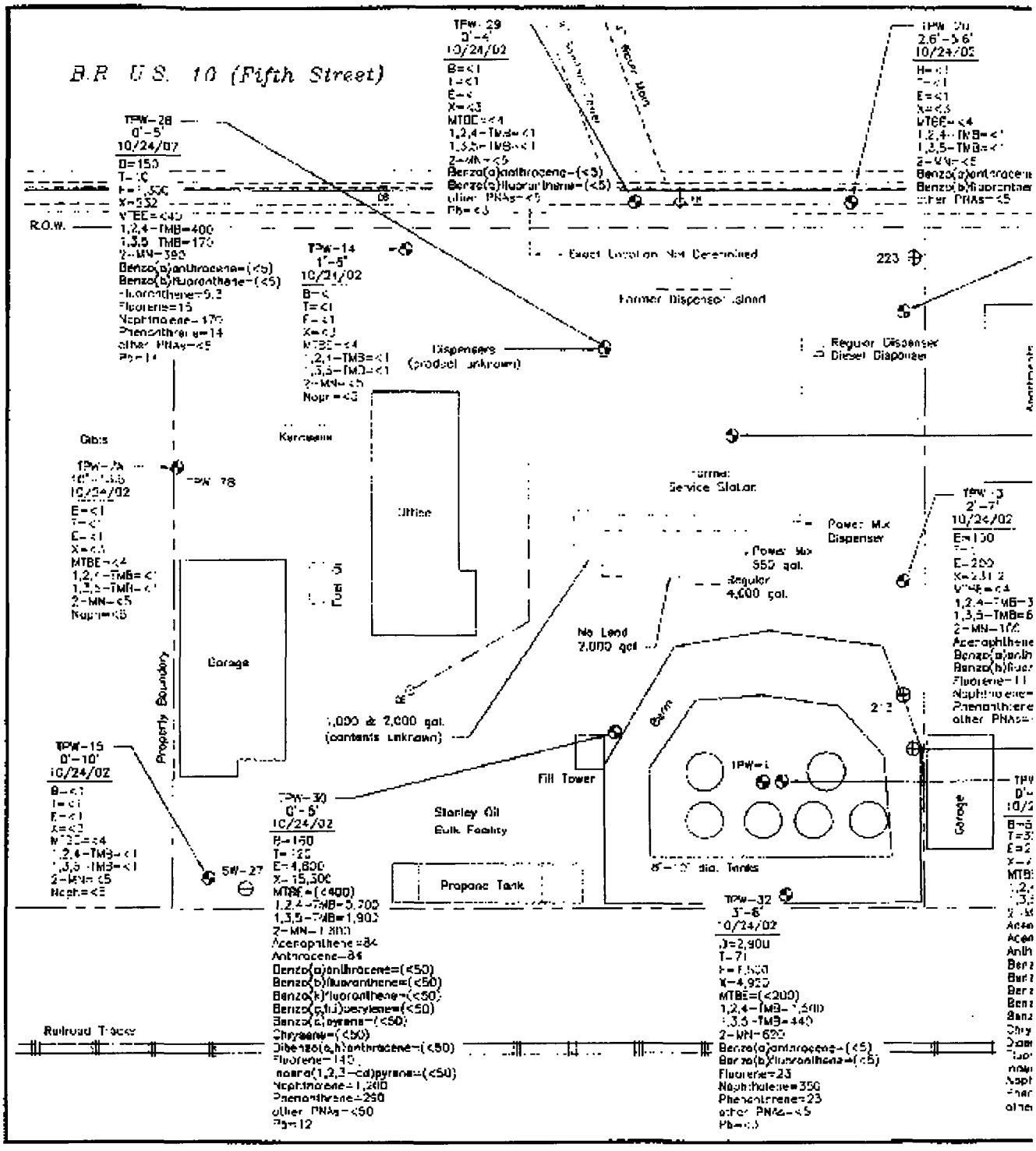
USEPA-Jon Peterson, **USEPA Comments on MDOT Remedial Design for Bio-Sparging System,** November 28, 1994.

Williams and Works, **Wellhead Protection Area Delineation – City of Clare**, May 1999.

ATTACHMENT C

STANLEY OIL PROPERTY INFORMATION PROVIDED BY MDEQ


KEY:
CB
Stanley Oil Bulk Facility
496 W. Fifth St. (B.R. 0 R.-30)
Clare, MI
Figure 2 On-site and off-site monitoring well locations
1 inch = 60 feet


B.R. U.S. 10 (Fifth Street)
R.O.W.
TPW-28
0'-5'
10/24/02
B=150
T=<1
E=1,550
X=932
MTBE=<40
1,2,4-TMB=400
1,3,5-TMB=170
2-MN=390
Benzo(a)anthracene=(<5)
Benzo(b)fluoranthene=(<5)
Fluoranthene=9.2
Fluorene=15
Naphthalene=170
Phenanthrene=14
other PNAs=<5
Pb=14
TPW-29
0'-5'
10/24/02
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Benzo(a)anthracene=(<5)
Benzo(b)fluoranthene=(<5)
other PNAs=<5
Pb=<3
TPW-30
2.6'-3.6'
10/24/02
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Benzo(a)anthracene
Benzo(b)fluoranthene
other PNAs=<5
TPW-14
1'-5'
10/24/02
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Napr=<3
Dispensers
(product unknown)
Exact Location Not Determined
Former Dispenser Island
223
Regular Dispenser
Diesel Dispenser
Gas
TPW-26
10'-15'
10/24/02
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Napr=<5
TPW-28
Kerosene
Office
Former
Service Station
Power Mix
Dispenser
Power Mix
550 gal.
Regular
4,000 gal.
No Lead
2,000 gal.
Garage
Property Boundary
1,000 & 2,000 gal.
(contents unknown)
Berm
Fill Tower
TPW-1
Garage
TPW-3
2'-7'
10/24/02
B=150
T=<1
E=200
X=2,312
MTBE=<4
1,2,4-TMB=3
1,3,5-TMB=6
2-MN=100
Acenaphthene
Benzo(a)anth
Benzo(b)fluor
Fluorene=11
Naphthalene
Phenanthrene
other PNAs=
TPW-15
0'-10'
10/24/02
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Naph=<5
SW-27
TPW-30
0'-5'
10/24/02
B=150
T=120
E=4,800
X=15,300
MTBE=(<400)
1,2,4-TMB=5,700
1,3,5-TMB=1,900
2-MN=1,800
Acenaphthene=84
Anthracene=84
Benzo(a)anthracene=(<50)
Benzo(b)fluoranthene=(<50)
Benzo(k)fluoranthene=(<50)
Benzo(g,h,i)perylene=(<50)
Benzo(a)pyrene=(<50)
Chrysene=(<50)
Dibenzo(a,h)anthracene=(<50)
Fluorene=140
Indeno(1,2,3-cd)pyrene=(<50)
Naphthalene=1,200
Phenanthrene=290
other PNAs=<50
Pb=12
Stanley Oil
Bulk Facility
Propane Tank
8'-10' dia. Tanks
TPW-32
3'-6'
10/24/02
B=2,900
T=71
E=1,500
X=4,950
MTBE=(<200)
1,2,4-TMB=1,600
1,3,5-TMB=440
2-MN=620
Benzo(a)anthracene=(<5)
Benzo(b)fluoranthene=(<5)
Fluorene=23
Naphthalene=350
Phenanthrene=23
other PNAs=<5
Pb=<3
Railroad Tracks

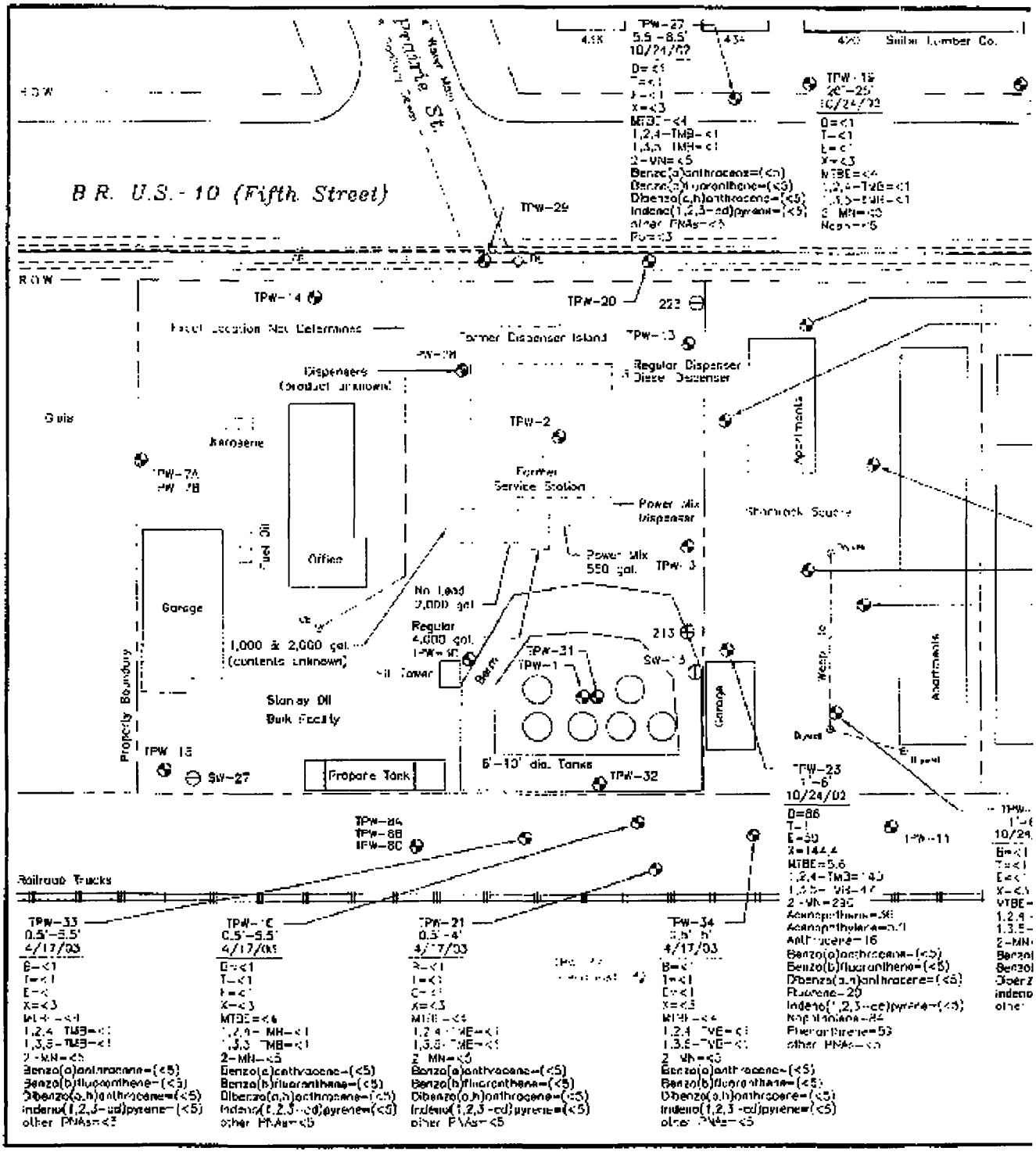

B R. U.S. - 10 (Fifth Street)
TPW-29
TPW-27
5.5 - 8.5'
10/24/02
TPW-14
TPW-20
TPW-13
Former Dispenser Island
Dispensers
(Product unknown)
Regular Dispenser
Diesel Dispenser
TPW-2
Former
Service Station
Power Mix
Dispenser
Power Mix
550 gal.
TPW-3
No Lead
2,000 gal.
Regular
4,000 gal.
1,000 & 2,000 gal.
(contents unknown)
Office
Garage
Fuel Oil
Kerosene
TPW-7A
TPW-7B
Property Boundary
Slansky Oil
Bulk Facility
TPW-15
SW-27
Propane Tank
TPW-31
TPW-1
SW-5
6'-10' dia. Tanks
TPW-32
Carport
Apartments
Shamrock Square
TPW-23
1'-6'
10/24/02
TPW-11
Railroad Tracks
TPW-33
0.5'-5.5'
4/17/03
TPW-21
0.5'-4'
4/17/03
TPW-34
4/17/03

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

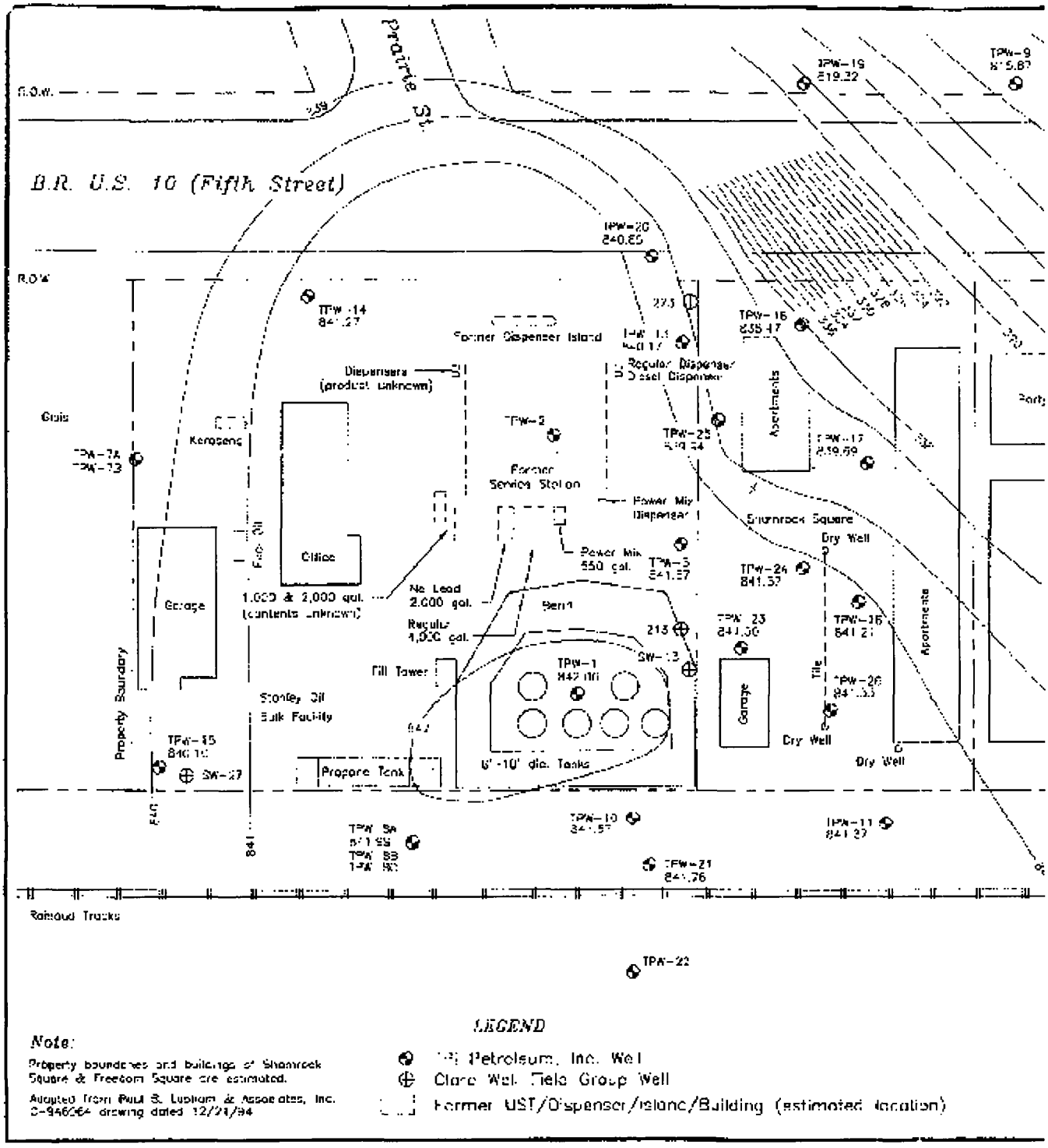
VOLATILES										
Sample ID	TPW-1		TPW-1		TPW-1		TPW-1		TPW-1	
Sample Depth (ft. b.g.s.)	4 - 8'		4 - 8'		4 - 8'		4 - 8'		4 - 8'	
Date Collected	12/7/1994		4/16/1996		9/4/1996		10/2/1997		4/19/1999	
Date Extracted										
Date Analyzed	??		4/25/1996		9/16/1996		10/13/1997		4/23/1999	
Analytical Method No.	502		602		8020A		8020A		8020	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
Benzene	2,200	?	2,600	200	990	1	2,300	1	3,020	1
Toluene	83	?	98	40	130	1	42	1	57	1
ethylbenzene	170	?	510	40	55	1	430	1	719	1
Total Xylenes	2,100	?	1,500	120	810	3	1,400	3	2,479	3
MTBE	NA		NA		NA		NA		NA	
1,2,4 - Trimethylbenzene	NA		NA		NA		NA		941	1
1,3,5 - Trimethylbenzene	NA		NA		NA		NA		230	1
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	TPW-1		TPW-1		TPW-1		TPW-1		TPW-1	
Sample Depth (ft. b.g.s.)	4 - 8'		4 - 8'		4 - 8'		4 - 8'		4 - 8'	
Date Collected	12/7/1994		4/16/1996		9/4/1996		10/2/1997		4/19/1999	
Date Extracted										
Date Analyzed	??		4/25/1996		9/13/1996		10/13/1997		4/23/1999	
Analytical Method No.	625		625		8270		8270		8270	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
Acenaphthene	7	5	ND	5	ND	5	ND	5	ND	5
Acenaphthylene	ND	5	ND	5	ND	5	ND	5	ND	5
Anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(a)anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(a)pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(b)fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(g,h,i)perylene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(k)fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Chrysene	ND	5	ND	5	ND	5	ND	5	ND	5
Dibenzo(a,h)anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
1,2-Dichloroethane	NA		NA		NA		NA		ND	10
1,2-Dichlorobenzene	NA		NA		NA		NA		ND	10
Fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Fluorene	11	5	6	5	ND	5	ND	5	6.6	5
Indeno(1,2,3-cd)pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
2 - Methylnaphthalene	NA		NA		NA		240	5	159	5
Naphthalene	230	5	250	5	240	5	300	5	181	5
Phenanthrene	14	5	8	5	ND	5	5	5	5.4	5
Pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
METALS										
Sample ID	TPW-1		TPW-1		TPW-1		TPW-1		TPW-1	
Sample Depth (ft. b.g.s.)	4 - 8'		4 - 8'		4 - 8'		4 - 8'		4 - 8'	
Date Collected	12/7/1994		4/16/1996		9/4/1996		10/2/1997		4/19/1999	
Date Extracted										
Date Analyzed			4/23/1996						4/22/1999	
Analytical Method No.			239.2						239.2	
Collection Method			Bailer						Bailer	
CONSTITUENT (ug/L)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
Total Lead	NA		ND	3	NA		NA		ND	3

MDL = Method Detection Limit
ND = Not Detected
NA = Not Analyzed

Stanlyey Gas and Oil, Clare bulk

- [illegible]
- NA [illegible]
- ND [illegible]

Well I.D.	Benzene	Toluene	Ethyl benzene	Total Xylenes	MTBE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Naph	2-Methyl Naph	Ammonia NH4
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Sampled [illegible]													
SGW-[illegible]													
8.1.2008 [illegible]	1930	5	153	405	9	<1	<1	1	1*	730	1Z	105	[illegible]
MW-[illegible]													
[illegible]	2200	37	170	1100	NA	NA	NA		NA	NA	300	NA	[illegible]
[illegible]	2200	26	3[illegible]	[illegible]	NA	NA	NA		NA	NA		NA	[illegible]
[illegible]	[illegible]	175	55	520	NA	NA	NA		NA	NA		NA	[illegible]
10.2[illegible]	2326	11	101	1000	NA	NA	NA		NA	NA		NA	[illegible]
[illegible]	[illegible]	57	7.0	[illegible]	NA	ND	ND		[illegible]	140	101	20	[illegible]
[illegible]	4[illegible]	90	300	2244	ND	ND	ND		212	280	[illegible]	260	[illegible]
3.1.04[illegible]	[illegible]	[illegible]	450	[illegible]	9	[illegible]	<1	45	145	[illegible]	213	[illegible]	[illegible]
MW-[illegible]													
[illegible]	[illegible]	[illegible]	50	410	ND	NA	NA		NA	NA	21	NA	yes
[illegible]	[illegible]	[illegible]	520	[illegible]	NA	NA	NA		NA	NA		NA	no
[illegible] 16 96	[illegible]	ND	110	[illegible]	NA	NA	NA		NA	NA		NA	yes
[illegible]	[illegible]	4	450	[illegible]	NA	NA	NA		NA	NA		NA	no
[illegible]	[illegible]	8.[illegible]	[illegible]	[illegible]	NA	ND	ND		2[illegible]	[illegible]	[illegible]	108	no
[illegible]	[illegible]	[illegible]	[illegible]	171	ND	ND	[illegible]		[illegible]	13	[illegible]	[illegible]	[illegible]
10.24.2[illegible] 29.02	[illegible]	[illegible]	[illegible]	[illegible]	ND	ND	[illegible]		[illegible]	[illegible]	2.[illegible]	210	no
[illegible]	5.7	[illegible]	159	6	<1	<1	<1	42	[illegible]	[illegible]	[illegible]	52	[illegible]
MW-[illegible]													
[illegible]	18[illegible]	14	[illegible]	3700	NA	NA	NA		NA	NA	250	NA	[illegible]
[illegible] 25 [illegible]	[illegible]	29	[illegible]	[illegible]	NA	NA	NA		NA	NA		NA	[illegible]
[illegible]	540	30	[illegible]	[illegible]	NA	NA	NA		NA	NA		NA	[illegible]
[illegible]	730	38	8[illegible]	160	NA	NA	NA		NA	NA		NA	[illegible]
[illegible] 29 99	[illegible]	ND	515	[illegible]	NA	ND	ND		130	[illegible]	330	[illegible]	[illegible]
[illegible]	790	9	203	[illegible]	ND	ND	ND		290	200	331	410	[illegible]
[illegible]	170	1	225	231	ND	ND	ND		[illegible]	330	221	[illegible]	YES
3.1[illegible]	[illegible]	ND	84	92	<5	<1	<1	3	4	31	[illegible]	[illegible]	NO


B.R. U.S. 10 (Fifth Street)
R.O.W.
Railroad Tracks
Former Dispenser Island
Regular Dispenser
Diesel Dispenser
Dispensers (product unknown)
Kerosene
Gas
Former Service Station
Power Mix Dispenser
Office
Garage
1,000 & 2,000 gal. (contents unknown)
No Lead 2,000 gal.
Regular 1,000 gal.
Power Mix 550 gal.
Berm
Fill Tower
Stanley Oil Bulk Facility
Property Boundary
Propane Tank
6'-10' dia. Tanks
Apartments
Shamrock Square
Dry Well
Tile
Garage
TPW-1
TPW-2
TPW-3
TPW-4
TPW-5
TPW-6
TPW-7A
TPW-8
TPW-9
TPW-10
TPW-11
TPW-12
TPW-13
TPW-14
TPW-15
TPW-16
TPW-17
TPW-18
TPW-19
TPW-20
TPW-21
TPW-22
TPW-23
TPW-24
TPW-25
TPW-26
SW-13
SW-27
841.37
841.76
LEGEND
Petrolsum, Inc. Well
Clare Wel. Tiele Group Well
Former UST/Dispenser/Island/Building (estimated location)
Note:
Property boundaries and buildings of Shamrock Square & Freedom Square are estimated.
Adapted from Paul S. Lupiani & Associates, Inc. C-946064 drawing dated 12/21/94

ATTACHMENT D

Clare Ready for Re-Use Report

Planning for the Future:

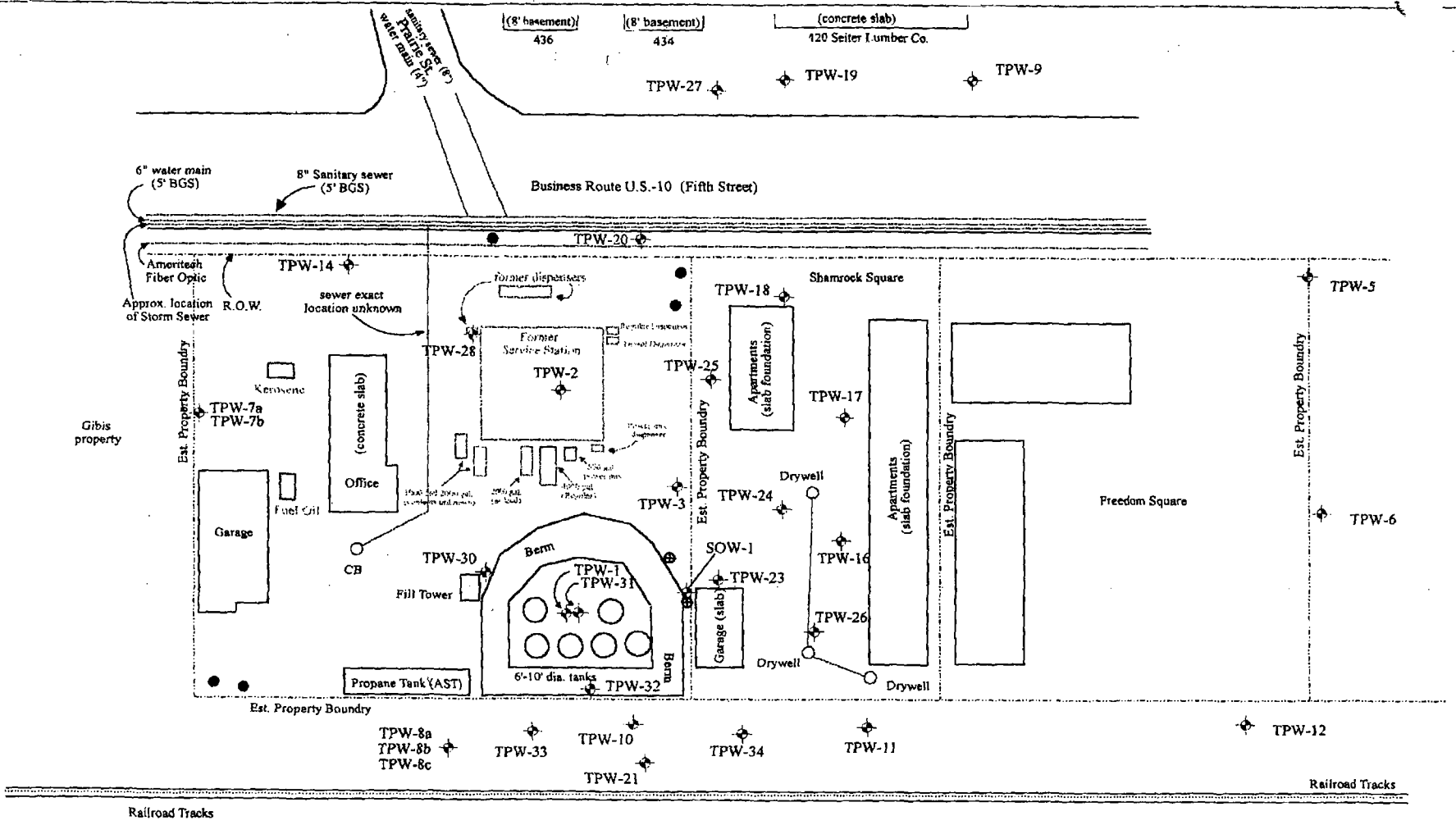
A Reuse Planning Report for the Clare Water Supply Superfund Site

November 2005

EPA Region 5
Superfund Redevelopment Initiative

City of Cla

funded by
United States Environmental Protection Agency



KEY:

⊕ = Clare well field group well

= Monitor Well Location

● = Former monitoring well location

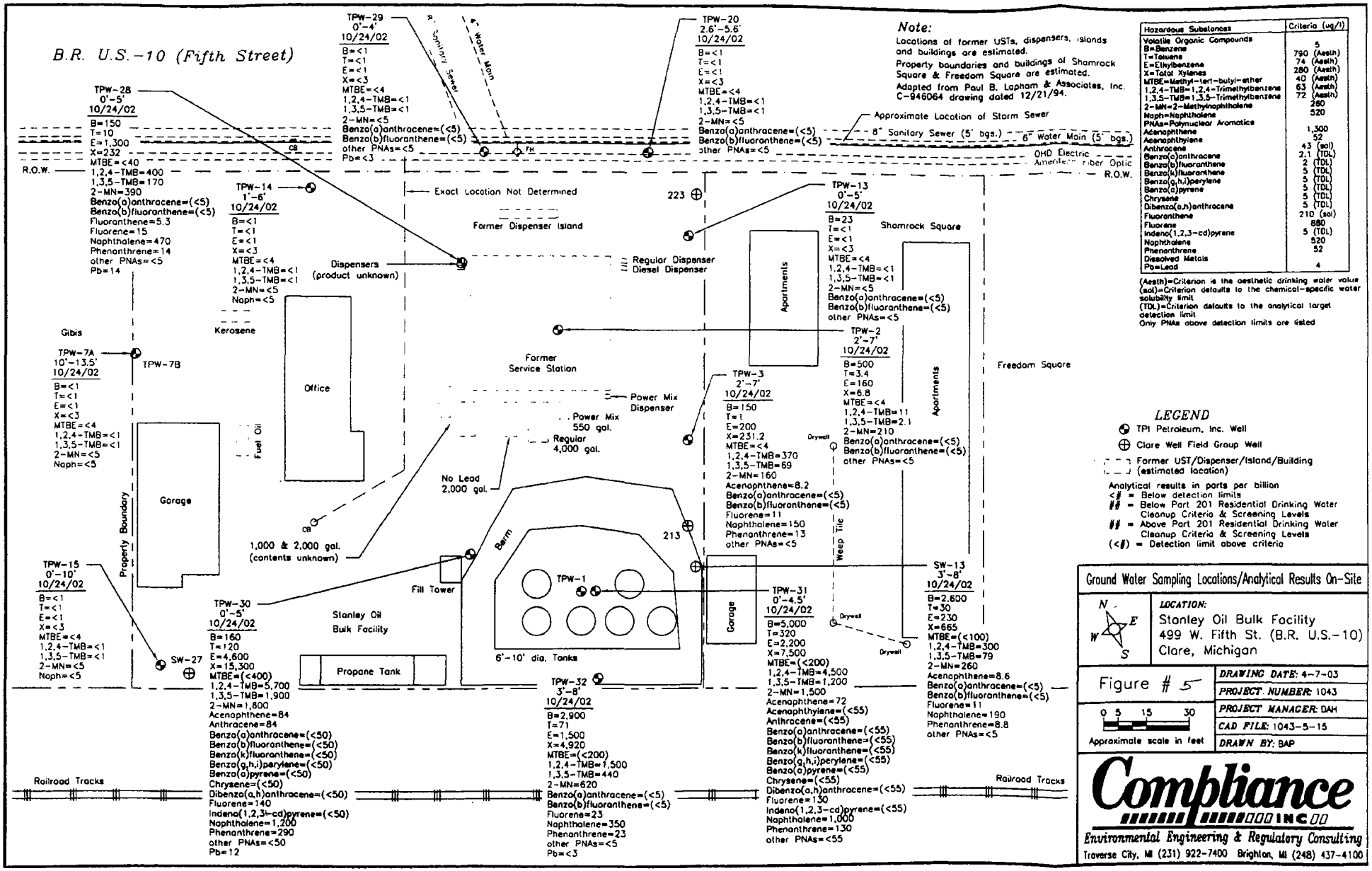
CB = Storm water catch basin

= removed structures

SITE NAME
Stanley Oil Bulk Facility
499 W. Fifth St. (B.R. U.S.-10)
Clare, MI

DRAWING TITLE
Figure 2 On-site and off-site monitoring well locations

Facility ID		
SCALE 1 Inch = 60 Feet	DATE 10.21.04	Page


B.R. U.S.-10 (Fifth Street)
TPW-29
0'-4'
10/24/02
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Benzo(a)anthracene=(<5)
Benzo(b)fluoranthene=(<5)
other PNAs=<5
Pb=<3
TPW-20
2.6'-5.6'
10/24/02
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Benzo(a)anthracene=(<5)
Benzo(b)fluoranthene=(<5)
other PNAs=<5
Note:
Locations of former USTs, dispensers, islands and buildings are estimated.
Property boundaries and buildings of Shamrock Square & Freedom Square are estimated.
Adapted from Paul B. Lapham & Associates, Inc. C-946064 drawing dated 12/21/94.
Approximate Location of Storm Sewer
8" Sanitary Sewer (5' bgs.)
6" Water Main (5' bgs.)
OHD Electric
Ameritech Fiber Optic
R.O.W.
TPW-28
0'-5'
10/24/02
B=150
T=10
E=1,300
X=232
MTBE=<40
1,2,4-TMB=400
1,3,5-TMB=170
2-MN=390
Benzo(a)anthracene=(<5)
Benzo(b)fluoranthene=(<5)
Fluoranthene=5.3
Fluorene=15
Naphthalene=470
Phenanthrene=14
other PNAs=<5
Pb=14
TPW-14
1'-6'
10/24/02
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Naph=<5
Exact Location Not Determined
Former Dispenser Island
Dispensers
(product unknown)
Kerosene
Gibis
TPW-7A
10'-13.5'
10/24/02
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Naph=<5
TPW-7B
Office
Fuel Oil
Garage
Property Boundary
CB
1,000 & 2,000 gal.
(contents unknown)
TPW-15
0'-10'
10/24/02
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Naph=<5
SW-27
TPW-30
0'-5'
10/24/02
B=160
T=120
E=4,600
X=15,300
MTBE=(<400)
1,2,4-TMB=5,700
1,3,5-TMB=1,900
2-MN=1,800
Acenaphthene=84
Anthracene=84
Benzo(a)anthracene=(<50)
Benzo(b)fluoranthene=(<50)
Benzo(k)fluoranthene=(<50)
Benzo(g,h,i)perylene=(<50)
Benzo(a)pyrene=(<50)
Chrysene=(<50)
Dibenzo(a,h)anthracene=(<50)
Fluorene=140
Indeno(1,2,3-cd)pyrene=(<50)
Naphthalene=1,200
Phenanthrene=290
other PNAs=<50
Pb=12
Stanley Oil
Bulk Facility
Propane Tank
Fill Tower
Berm
6'-10' dia. Tanks
TPW-1
TPW-32
3'-8'
10/24/02
B=2,900
T=71
E=1,500
X=4,920
MTBE=(<200)
1,2,4-TMB=1,500
1,3,5-TMB=440
2-MN=620
Benzo(a)anthracene=(<5)
Benzo(b)fluoranthene=(<5)
Fluorene=23
Naphthalene=350
Phenanthrene=23
other PNAs=<5
Pb=<3
Railroad Tracks
Railroad Tracks
Former Service Station
Power Mix Dispenser
Power Mix
550 gal.
Regular
4,000 gal.
No Lead
2,000 gal.
Regular Dispenser
Diesel Dispenser
223
213
TPW-13
0'-5'
10/24/02
B=23
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Benzo(a)anthracene=(<5)
Benzo(b)fluoranthene=(<5)
other PNAs=<5
Shamrock Square
Apartments
TPW-2
2'-7'
10/24/02
B=500
T=3.4
E=160
X=6.8
MTBE=<4
1,2,4-TMB=11
1,3,5-TMB=2.1
2-MN=210
Benzo(a)anthracene=(<5)
Benzo(b)fluoranthene=(<5)
other PNAs=<5
Freedom Square
Apartments
TPW-3
2'-7'
10/24/02
B=150
T=1
E=200
X=231.2
MTBE=<4
1,2,4-TMB=370
1,3,5-TMB=69
2-MN=160
Acenaphthene=8.2
Benzo(a)anthracene=(<5)
Benzo(b)fluoranthene=(<5)
Fluorene=11
Naphthalene=150
Phenanthrene=13
other PNAs=<5
Drywell
Weep Tile
Garage
TPW-31
0'-4.5'
10/24/02
B=5,000
T=320
E=2,200
X=7,500
MTBE=(<200)
1,2,4-TMB=4,500
1,3,5-TMB=1,200
2-MN=1,500
Acenaphthene=72
Acenaphthylene=(<55)
Anthracene=(<55)
Benzo(a)anthracene=(<55)
Benzo(b)fluoranthene=(<55)
Benzo(k)fluoranthene=(<55)
Benzo(g,h,i)perylene=(<55)
Benzo(a)pyrene=(<55)
Chrysene=(<55)
Dibenzo(a,h)anthracene=(<55)
Fluorene=130
Indeno(1,2,3-cd)pyrene=(<55)
Naphthalene=1,000
Phenanthrene=130
other PNAs=<55
Drywell
Drywell
SW-13
3'-8'
10/24/02
B=2,600
T=30
E=230
X=665
MTBE=(<100)
1,2,4-TMB=300
1,3,5-TMB=79
2-MN=260
Acenaphthene=8.6
Benzo(a)anthracene=(<5)
Benzo(b)fluoranthene=(<5)
Fluorene=11
Naphthalene=190
Phenanthrene=8.8
other PNAs=<5
Hazardous Substances
Criteria (ug/l)
Volatile Organic Compounds
B=Benzene 5
T=Toluene 790 (Aesth)
E=Ethylbenzene 74 (Aesth)
X=Total Xylenes 280 (Aesth)
MTBE=Methyl-tert-butyl-ether 40 (Aesth)
1,2,4-TMB=1,2,4-Trimethylbenzene 63 (Aesth)
1,3,5-TMB=1,3,5-Trimethylbenzene 72 (Aesth)
2-MN=2-Methylnaphthalene 260
Naph=Naphthalene 520
PNAs=Polynuclear Aromatics
Acenaphthene 1,300
Acenaphthylene 52
Anthracene 43 (sol)
Benzo(a)anthracene 2.1 (TDL)
Benzo(b)fluoranthene 2 (TDL)
Benzo(k)fluoranthene 5 (TDL)
Benzo(g,h,i)perylene 5 (TDL)
Benzo(a)pyrene 5 (TDL)
Chrysene 5 (TDL)
Dibenzo(a,h)anthracene 5 (TDL)
Fluoranthene 210 (sol)
Fluorene 880
Indeno(1,2,3-cd)pyrene 5 (TDL)
Naphthalene 520
Phenanthrene 52
Dissolved Metals
Pb=Lead 4
(Aesth)=Criterion is the aesthetic drinking water value
(sol)=Criterion defaults to the chemical-specific water solubility limit
(TDL)=Criterion defaults to the analytical target detection limit
Only PNAs above detection limits are listed
LEGEND
TPI Petroleum, Inc. Well
Clare Well Field Group Well
Former UST/Dispenser/Island/Building (estimated location)
Analytical results in parts per billion
<# = Below detection limits
= Below Part 201 Residential Drinking Water Cleanup Criteria & Screening Levels
= Above Part 201 Residential Drinking Water Cleanup Criteria & Screening Levels
(<#) = Detection limit above criteria
Ground Water Sampling Locations/Analytical Results On-Site
N
E
W
S
LOCATION:
Stanley Oil Bulk Facility
499 W. Fifth St. (B.R. U.S.-10)
Clare, Michigan
Figure # 5
DRAWING DATE: 4-7-03
PROJECT NUMBER: 1043
PROJECT MANAGER: DAH
CAD FILE: 1043-5-15
DRAWN BY: BAP
0 5 15 30
Approximate scale in feet
Compliance
INC
Environmental Engineering & Regulatory Consulting
Traverse City, MI (231) 922-7400 Brighton, MI (248) 437-4100

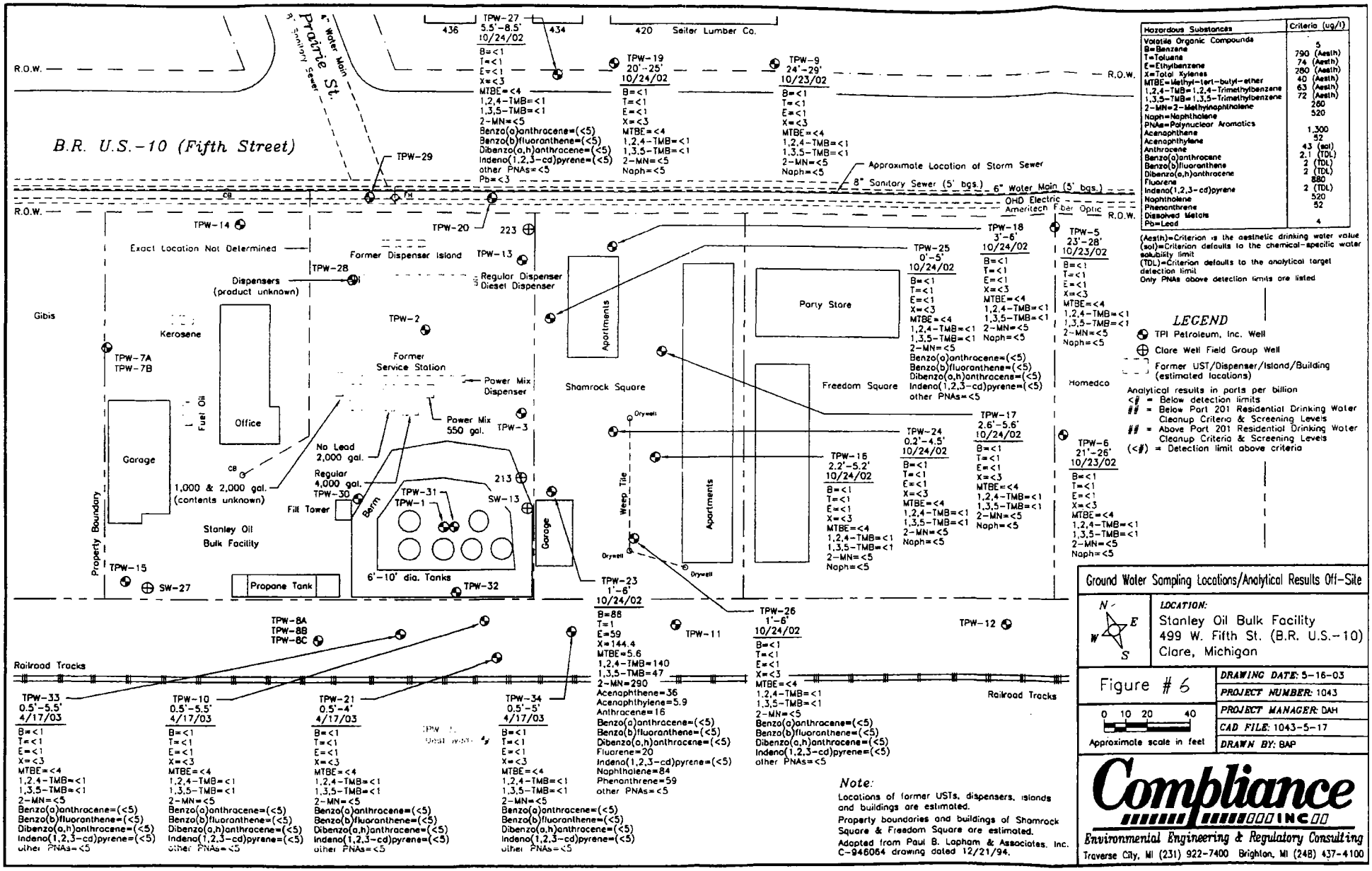

B.R. U.S.-10 (Fifth Street)
R.O.W.
Prairie St.
8" Water Main
Sanitary Sewer
436
434
420
Seiter Lumber Co.
TPW-27
5.5'-8.5'
10/24/02
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Benzo(a)anthracene=(<5)
Benzo(b)fluoranthene=(<5)
Dibenzo(a,h)anthracene=(<5)
Indeno(1,2,3-cd)pyrene=(<5)
other PNAs=<5
Pb=<3
TPW-19
20'-25'
10/24/02
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Naph=<5
TPW-9
24'-29'
10/23/02
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Naph=<5
TPW-29
Approximate Location of Storm Sewer
8" Sanitary Sewer (5' bgs.)
6" Water Main (5' bgs.)
OHD Electric
Ameritech Fiber Optic
CB
MH
TPW-14
Exact Location Not Determined
TPW-20
223
Former Dispenser Island
TPW-13
TPW-28
Dispensers
(product unknown)
Regular Dispenser
Diesel Dispenser
Gibis
Kerosene
TPW-2
TPW-7A
TPW-7B
Former
Service Station
Power Mix
Dispenser
Fuel Oil
Office
Garage
Power Mix
550 gal.
TPW-3
No Lead
2,000 gal.
Regular
4,000 gal.
TPW-30
1,000 & 2,000 gal.
(contents unknown)
Fill Tower
Berm
TPW-31
TPW-1
213
SW-13
Garage
Stanley Oil
Bulk Facility
Property Boundary
TPW-15
SW-27
Propane Tank
6'-10' dia. Tanks
TPW-32
Apartments
Shamrock Square
Party Store
Freedom Square
Apartments
Drywell
Weep Tile
Drywell
Drywell
TPW-18
3'-6'
10/24/02
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Naph=<5
TPW-25
0'-5'
10/24/02
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Naph=<5
Benzo(a)anthracene=(<5)
Benzo(b)fluoranthene=(<5)
Dibenzo(a,h)anthracene=(<5)
Indeno(1,2,3-cd)pyrene=(<5)
other PNAs=<5
TPW-5
23'-28'
10/23/02
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Naph=<5
Homedco
TPW-17
2.6'-5.6'
10/24/02
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Naph=<5
TPW-24
0.2'-4.5'
10/24/02
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Naph=<5
TPW-16
2.2'-5.2'
10/24/02
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Naph=<5
TPW-6
21'-26'
10/23/02
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Naph=<5
TPW-23
1'-6'
10/24/02
B=88
T=1
E=59
X=144.4
MTBE=5.6
1,2,4-TMB=140
1,3,5-TMB=47
2-MN=290
Acenaphthene=36
Acenaphthylene=5.9
Anthracene=16
Benzo(a)anthracene=(<5)
Benzo(b)fluoranthene=(<5)
Dibenzo(a,h)anthracene=(<5)
Fluorene=20
Indeno(1,2,3-cd)pyrene=(<5)
Naphthalene=84
Phenanthrene=59
other PNAs=<5
TPW-11
TPW-26
1'-6'
10/24/02
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Benzo(a)anthracene=(<5)
Benzo(b)fluoranthene=(<5)
Dibenzo(a,h)anthracene=(<5)
Indeno(1,2,3-cd)pyrene=(<5)
other PNAs=<5
TPW-12
Railroad Tracks
Railroad Tracks
TPW-8A
TPW-8B
TPW-8C
TPW-33
0.5'-5.5'
4/17/03
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Benzo(a)anthracene=(<5)
Benzo(b)fluoranthene=(<5)
Dibenzo(a,h)anthracene=(<5)
Indeno(1,2,3-cd)pyrene=(<5)
other PNAs=<5
TPW-10
0.5'-5.5'
4/17/03
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Benzo(a)anthracene=(<5)
Benzo(b)fluoranthene=(<5)
Dibenzo(a,h)anthracene=(<5)
Indeno(1,2,3-cd)pyrene=(<5)
other PNAs=<5
TPW-21
0.5'-4'
4/17/03
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Benzo(a)anthracene=(<5)
Benzo(b)fluoranthene=(<5)
Dibenzo(a,h)anthracene=(<5)
Indeno(1,2,3-cd)pyrene=(<5)
other PNAs=<5
TPW-34
0.5'-5'
4/17/03
B=<1
T=<1
E=<1
X=<3
MTBE=<4
1,2,4-TMB=<1
1,3,5-TMB=<1
2-MN=<5
Benzo(a)anthracene=(<5)
Benzo(b)fluoranthene=(<5)
Dibenzo(a,h)anthracene=(<5)
Indeno(1,2,3-cd)pyrene=(<5)
other PNAs=<5
Hazardous Substances
Criteria (ug/l)
Volatile Organic Compounds
B=Benzene 5
T=Toluene 790 (Aesth)
E=Ethylbenzene 74 (Aesth)
X=Total Xylenes 280 (Aesth)
MTBE=Methyl-tert-butyl-ether 40 (Aesth)
1,2,4-TMB=1,2,4-Trimethylbenzene 63 (Aesth)
1,3,5-TMB=1,3,5-Trimethylbenzene 72 (Aesth)
2-MN=2-Methylnaphthalene 260
Naph=Naphthalene 520
PNAs=Polynuclear Aromatics
Acenaphthene 1,300
Acenaphthylene 52
Anthracene 43 (sol)
Benzo(a)anthracene 2.1 (TDL)
Benzo(b)fluoranthene 2 (TDL)
Dibenzo(a,h)anthracene 2 (TDL)
Fluorene 880
Indeno(1,2,3-cd)pyrene 2 (TDL)
Naphthalene 520
Phenanthrene 52
Dissolved Metals
Pb=Lead 4
(Aesth)=Criterion is the aesthetic drinking water value
(sol)=Criterion defaults to the chemical-specific water solubility limit
(TDL)=Criterion defaults to the analytical target detection limit
Only PNAs above detection limits are listed
LEGEND
TPI Petroleum, Inc. Well
Clare Well Field Group Well
Former UST/Dispenser/Island/Building (estimated locations)
Analytical results in parts per billion
<# = Below detection limits
= Below Part 201 Residential Drinking Water Cleanup Criteria & Screening Levels
= Above Part 201 Residential Drinking Water Cleanup Criteria & Screening Levels
(<#) = Detection limit above criteria
Note:
Locations of former USTs, dispensers, islands and buildings are estimated.
Property boundaries and buildings of Shamrock Square & Freedom Square are estimated.
Adapted from Paul B. Lapham & Associates, Inc. C-946064 drawing dated 12/21/94.
Ground Water Sampling Locations/Analytical Results Off-Site
N
E
W
S
LOCATION:
Stanley Oil Bulk Facility
499 W. Fifth St. (B.R. U.S.-10)
Clare, Michigan
Figure # 6
DRAWING DATE: 5-16-03
PROJECT NUMBER: 1043
PROJECT MANAGER: DAH
CAD FILE: 1043-5-17
DRAWN BY: BAP
0 10 20 40
Approximate scale in feet
Compliance
INC
Environmental Engineering & Regulatory Consulting
Traverse City, MI (231) 922-7400 Brighton, MI (248) 437-4100

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-1		TPW-1		TPW-1		TPW-1		TPW-1	
Sample Depth (ft. b.g.s.)	4 - 6'		4 - 6'		4 - 6'		4 - 6'		4 - 6'	
Date Collected	12/7/1994		4/16/1996		9/4/1996		10/2/1997		4/19/1999	
Date Extracted										
Date Analyzed	??		4/25/1996		9/16/1996		10/13/1997		4/23/1999	
Analytical Method No.	602		602		8020A		8020A		8020	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	2,200	?	2,600	200	990	1	2,300	1	3,520	1
Toluene	83	?	98	40	130	1	40	1	57	1
Ethylbenzene	170	?	510	40	33	1	430	1	710	1
Total Xylenes	2,100	?	1,800	120	810	3	1,400	3	2,478	3
MTBE	NA		NA		NA		NA		NA	
1,2,4 - Trimethylbenzene	NA		NA		NA		NA		941	1
1,3,5 - Trimethylbenzene	NA		NA		NA		NA		230	1
POLYNUCLEAR AROMATICS(PNAs)										
Sample ID	TPW-1		TPW-1		TPW-1		TPW-1		TPW-1	
Sample Depth (ft. b.g.s.)	4 - 6'		4 - 6'		4 - 6'		4 - 6'		4 - 6'	
Date Collected	12/7/1994		4/16/1996		9/4/1996		10/2/1997		4/19/1999	
Date Extracted										
Date Analyzed	??		4/25/1996		9/16/1996		10/13/1997		4/23/1999	
Analytical Method No.	625		625		8270		8270		8270	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	7	5	ND	5	ND	5	ND	5	ND	5
Acenaphthylene	ND	5	ND	5	ND	5	ND	5	ND	5
Anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(a)anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(a)pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(b)fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(g,h,i)perylene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(k)fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Chrysene	ND	5	ND	5	ND	5	ND	5	ND	5
Dibenzo(a,h)anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
1,2-Dibromoethane	NA		NA		NA		NA		ND	10
1,2-Dichloroethane	NA		NA		NA		NA		ND	10
Fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Fluorene	11	5	6	5	ND	5	ND	5	6.5	5
Indeno(1,2,3-cd)pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
2 - Methylnaphthalene	NA		NA		NA		240	5	159	5
Naphthalene	260	5	250	5	240	5	300	5	181	5
Phenanthrene	14	5	8	5	ND	5	5	5	6.4	5
Pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
METALS										
Sample ID	TPW-1		TPW-1		TPW-1		TPW-1		TPW-1	
Sample Depth (ft. b.g.s.)	4 - 6'		4 - 6'		4 - 6'		4 - 6'		4 - 6'	
Date Collected	12/7/1994		4/16/1996		9/4/1996		10/2/1997		4/19/1999	
Date Extracted										
Date Analyzed			4/23/1996						4/22/1999	
Analytical Method No.			239.2						239.2	
Collection Method			Bailer						Bailer	
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		ND	3	NA		NA		ND	3

MDL = Method Detection Limit
ND = Not Detected
NA = Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-1		TPW-2		TPW-2		TPW-2		TPW-2	
Sample Depth (ft. b.g.s.)	4 - 6'		2 - 7'		2 - 7'		2 - 7'		2 - 7'	
Date Collected	7/25/2001		12/8/1994		4/3/1996		9/4/1996		10/2/1997	
Date Extracted										
Date Analyzed	7/26/2001		??		4/11/1996		9/16/1996		10/13/1997	
Analytical Method No.	8260		602		602		8020A		8020A	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	4,100	25	330	?	540	5	330	1	700	10
Toluene	80	25	9.5	?	6	1	ND	1	4	1
Ethylbenzene	700	25	150	?	670	1	310	1	550	10
Total Xylenes	2,244	75	410	?	330	3	260	3	64	30
MTBE	ND	120	NA		NA		NA		NA	
1,2,4 - Trimethylbenzene	780	25	NA		NA		NA		NA	
1,3,5 - Trimethylbenzene	210	25	NA		NA		NA		NA	
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	TPW-1		TPW-2		TPW-2		TPW-2		TPW-2	
Sample Depth (ft. b.g.s.)	4 - 6'		2 - 7'		2 - 7'		2 - 7'		2 - 7'	
Date Collected	7/25/2001		12/8/1994		4/3/1996		9/4/1996		10/2/1997	
Date Extracted										
Date Analyzed	7/26/2001		??		4/11/1996		9/16/1996		10/13/1997	
Analytical Method No.	8270		625		625		8270		8270	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	ND	5	NA		ND	5	ND	5	ND	5
Acenaphthylene	ND	5	NA		ND	5	ND	5	ND	5
Anthracene	5.9	5	NA		ND	5	ND	5	ND	5
Benzo(a)anthracene	ND	5	NA		ND	5	ND	5	ND	5
Benzo(a)pyrene	ND	5	NA		ND	5	ND	5	ND	5
Benzo(b)fluoranthene	ND	5	NA		ND	5	ND	5	ND	5
Benzo(g,h,i)perylene	ND	5	NA		ND	5	ND	5	ND	5
Benzo(k)fluoranthene	ND	5	NA		ND	5	ND	5	ND	5
Chrysene	ND	5	NA		ND	5	ND	5	ND	5
Dibenzo(a,h)anthracene	ND	5	NA		ND	5	ND	5	ND	5
1,2-Dibromoethane	NA		NA		NA		NA		NA	
1,2-Dichloroethane	NA		NA		NA		NA		NA	
Fluoranthene	ND	5	NA		ND	5	ND	5	ND	5
Fluorene	7.9	5	NA		ND	5	ND	5	ND	5
Indeno(1,2,3-cd)pyrene	ND	5	NA		ND	5	ND	5	ND	5
2 - Methylnaphthalene	590	120	NA		NA		NA		150	5
Naphthalene	260	5	NA		290	5	360	5	220	5
Phenanthrene	6.2	5	NA		ND	5	5	5	ND	5
Pyrene	ND	5	NA		ND	5	ND	5	ND	5
METALS										
Sample ID	TPW-1		TPW-2		TPW-2		TPW-2		TPW-2	
Sample Depth (ft. b.g.s.)	4 - 6'		2 - 7'		2 - 7'		2 - 7'		2 - 7'	
Date Collected	7/25/2001		12/8/1994		4/3/1996		9/4/1996		10/2/1997	
Date Extracted										
Date Analyzed					4/8/1996				10/8/1997	
Analytical Method No.					239.2				239.2	
Collection Method					Bailer				Bailer	
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		NA		4	3	NA		ND	3

MDL = Method Detection Limit
ND = Not Detected
NA = Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-2		TPW-2		TPW-2		TPW-3		TPW-3	
Sample Depth (ft. b.g.s.)	2 - 7'		2 - 7'		2 - 7'		2 - 7'		2 - 7'	
Date Collected	4/19/1999		7/25/2001		10/24/2002		12/8/1994		4/16/1996	
Date Extracted										
Date Analyzed	4/22/1999		7/27/2001		10/29/2002		??		4/25/1996	
Analytical Method No.	8020		8260		8260		602		602	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	805	1	670	5	500	5	1,800	?	1,000	100
Toluene	8.5	1	5.2	1	3.4	1	34	?	29	20
Ethylbenzene	750	1	440	5	160	5	1,100	?	690	20
Total Xylenes	107.5	3	17.1	3	6.8	3	3,700	?	2,800	60
MTBE	NA		ND	5	ND	4	NA		NA	
1,2,4 - Trimethylbenzene	14.9	1	12	1	11	1	NA		NA	
1,3,5 - Trimethylbenzene	29.9	1	2.3	1	2.1	1	NA		NA	
POLYNUCLEAR AROMATICS(PNAs)										
Sample ID	TPW-2		TPW-2		TPW-2		TPW-3		TPW-3	
Sample Depth (ft. b.g.s.)	2 - 7'		2 - 7'		2 - 7'		2 - 7'		2 - 7'	
Date Collected	4/19/1999		7/25/2001		10/24/2002		12/8/1994		4/16/1996	
Date Extracted										
Date Analyzed	4/22/1999		7/27/2001		10/29/2002		??		4/25/1996	
Analytical Method No.	8270		8270		8270		625		625	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	ND	5	ND	5	ND	5	ND	5	ND	5
Acenaphthylene	ND	5	ND	5	ND	5	ND	5	ND	5
Anthracene	ND	5	5.5	5	ND	5	ND	5	ND	5
Benzo(a)anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(a)pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(b)fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(g,h,i)perylene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(k)fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Chrysene	ND	5	ND	5	ND	5	ND	5	ND	5
Dibenzo(a,h)anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
1,2-Dibromoethane	ND	1	NA		NA		NA		NA	
1,2-Dichloroethane	ND	1	NA		NA		NA		NA	
Fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Fluorene	ND	5	ND	5	ND	5	6.8	5	ND	5
Indeno(1,2,3-cd)pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
2 - Methylnaphthalene	108	5	200	25	210	5	NA		NA	
Naphthalene	168	5	270	5	210	5	340	5	240	5
Phenanthrene	ND	5	5.8	5	ND	5	7.5	5	ND	5
Pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
METALS										
Sample ID	TPW-2		TPW-2		TPW-2		TPW-3		TPW-3	
Sample Depth (ft. b.g.s.)	2 - 7'		2 - 7'		2 - 7'		2 - 7'		2 - 7'	
Date Collected	4/19/1999		7/25/2001		10/24/2002		12/8/1994		4/16/1996	
Date Extracted										
Date Analyzed	4/22/1999								4/23/1996	
Analytical Method No.	239.2								239.2	
Collection Method	Bailer								Bailer	
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	5	3	NA		NA		NA		7	3

MDL = Method Detection Limit
ND = Not Detected
NA = Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-3		TPW-3		TPW-3		TPW-3		TPW-3	
Sample Depth (ft. b.g.s.)	2 - 7'		2 - 7'		2 - 7'		2 - 7'		2 - 7'	
Date Collected	9/4/1996		10/2/1997		4/19/1999		7/25/2001		10/24/2002	
Date Extracted										
Date Analyzed	9/16/1996		10/14/1997		4/23/1999		7/26/2001		10/30/2002	
Analytical Method No.	8020A		8020A		8020		8260		8260	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	640	1	780	10	672	25	790	25	150	1
Toluene	180	1	38	10	ND	25	31	25	1	1
Ethylbenzene	330	1	850	10	588	25	1,200	25	200	1
Total Xylenes	1,100	3	180	30	945	75	1,300	75	231	3
MTBE	NA		NA		NA		ND	120	ND	4
1,2,4 - Trimethylbenzene	NA		NA		767	25	1,500	25	370	1
1,3,5 - Trimethylbenzene	NA		NA		150	25	260	25	69	1
POLYNUCLEAR AROMATICS(PNAs)										
Sample ID	TPW-3		TPW-3		TPW-3		TPW-3		TPW-3	
Sample Depth (ft. b.g.s.)	2 - 7'		2 - 7'		2 - 7'		2 - 7'		2 - 7'	
Date Collected	9/4/1996		10/2/1997		4/19/1999		7/25/2001		10/24/2002	
Date Extracted										
Date Analyzed	9/16/1996		10/14/1997		4/23/1999		7/26/2001		10/30/2002	
Analytical Method No.	8270		8270		8270		8270		8270	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	7	5	7	5	ND	5	ND	5	8.2	5
Acenaphthylene	ND	5	ND	5	ND	5	ND	5	ND	5
Anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(a)anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(a)pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(b)fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(g,h,i)perylene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(k)fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Chrysene	ND	5	ND	5	ND	5	ND	5	ND	5
Dibenzo(a,h)anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
1,2-Dibromoethane	NA		NA		ND	25	NA		NA	
1,2-Dichloroethane	NA		NA		ND	25	NA		NA	
Fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Fluorene	10	5	10	5	6.5	5	5.4	5	11	5
Indeno(1,2,3-cd)pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
2 - Methylnaphthalene	NA		270	5	204	5	670	120	160	5
Naphthalene	550	5	370	5	226	5	220	5	220	5
Phenanthrene	9	5	10	5	6.5	5	ND	5	13	5
Pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
METALS										
Sample ID	TPW-3		TPW-3		TPW-3		TPW-3		TPW-3	
Sample Depth (ft. b.g.s.)	2 - 7'		2 - 7'		2 - 7'		2 - 7'		2 - 7'	
Date Collected	9/4/1996		10/2/1997		4/19/1999		7/25/2001		10/24/2002	
Date Extracted										
Date Analyzed			10/8/1997		4/22/1999					
Analytical Method No.			239.2		239.2					
Collection Method			Bailer		Bailer					
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		ND	3	ND	3	NA		NA	

MDL = Method Detection Limit
ND = Not Detected
NA = Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-5		TPW-5		TPW-5		TPW-5		TPW-5	
Sample Depth (ft. b.g.s.)	23 - 28'		23 - 28'		23 - 28'		23 - 28'		23 - 28'	
Date Collected	12/9/1994		4/16/1996		9/4/1996		10/2/1997		4/19/1999	
Date Extracted										
Date Analyzed	??		4/26/1996		9/15/1996		10/10/1997		4/22/1999	
Analytical Method No.	602		602		8020A		8020A		8020	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	ND	1	ND	5	ND	1	ND	1	ND	1
Toluene	ND	1	ND	1	ND	1	ND	1	ND	1
Ethylbenzene	ND	1	ND	1	ND	1	ND	1	ND	1
Total Xylenes	ND	3	ND	3	ND	3	ND	3	ND	3
MTBE	NA		NA		NA		NA		NA	
1,2,4 - Trimethylbenzene	NA		NA		NA		NA		ND	1
1,3,5 - Trimethylbenzene	NA		NA		NA		NA		ND	1
POLYNUCLEAR AROMATICS(PNAs)										
Sample ID	TPW-5		TPW-5		TPW-5		TPW-5		TPW-5	
Sample Depth (ft. b.g.s.)	23 - 28'		23 - 28'		23 - 28'		23 - 28'		23 - 28'	
Date Collected	12/9/1994		4/16/1996		9/4/1996		10/2/1997		4/19/1999	
Date Extracted										
Date Analyzed	??		4/26/1996		9/15/1996		10/10/1997		4/22/1999	
Analytical Method No.	625		625		8270		8270		8270	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	ND	5	ND	5	ND	5	ND	5	ND	5
Acenaphthylene	ND	5	ND	5	ND	5	ND	5	ND	5
Anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(a)anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(a)pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(b)fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(g,h,i)perylene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(k)fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Chrysene	ND	5	ND	5	ND	5	ND	5	ND	5
Dibenzo(a,h)anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
1,2-Dibromoethane	NA		NA		NA		NA		ND	1
1,2-Dichloroethane	NA		NA		NA		NA		ND	1
Fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Fluorene	ND	5	ND	5	ND	5	ND	5	ND	5
Indeno(1,2,3-cd)pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
2 - Methylnaphthalene	NA		NA		NA		ND	5	ND	5
Naphthalene	ND	5	ND	5	ND	5	ND	5	ND	5
Phenanthrene	ND	5	ND	5	ND	5	ND	5	ND	5
Pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
METALS										
Sample ID	TPW-5		TPW-5		TPW-5		TPW-5		TPW-5	
Sample Depth (ft. b.g.s.)	23 - 28'		23 - 28'		23 - 28'		23 - 28'		23 - 28'	
Date Collected	12/9/1994		4/16/1996		9/4/1996		10/2/1997		4/19/1999	
Date Extracted										
Date Analyzed			4/23/1996						4/22/1999	
Analytical Method No.			239.2						239.2	
Collection Method			Bailer						Bailer	
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		ND	3	NA		NA		ND	3

MDL = Method Detection Limit
ND = Not Detected
NA = Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-5		TPW-5		TPW-6		TPW-6		TPW-6	
Sample Depth (ft. b.g.s.)	23 - 28'		23 - 28'		21 - 26'		21 - 26'		21 - 26'	
Date Collected	7/25/2001		10/23/2002		12/9/1994		4/16/1996		9/4/1996	
Date Extracted										
Date Analyzed	7/27/2001		10/29/2002		??		4/25/1996		9/15/1996	
Analytical Method No.	8260		8260		602		602		8020A	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	ND	1	ND	1	ND	1	ND	5	ND	1
Toluene	ND	1	ND	1	ND	1	ND	1	ND	1
Ethylbenzene	ND	1	ND	1	ND	1	ND	1	ND	1
Total Xylenes	ND	3	ND	3	ND	3	ND	3	ND	3
MTBE	ND	5	ND	4	NA		NA		NA	
1,2,4 - Trimethylbenzene	ND	1	ND	1	NA		NA		NA	
1,3,5 - Trimethylbenzene	ND	1	ND	1	NA		NA		NA	
POLYNUCLEAR AROMATICS(PNAS)										
Sample ID	TPW-5		TPW-5		TPW-6		TPW-6		TPW-6	
Sample Depth (ft. b.g.s.)	23 - 28'		23 - 28'		21 - 26'		21 - 26'		21 - 26'	
Date Collected	7/25/2001		10/23/2002		12/9/1994		4/16/1996		9/4/1996	
Date Extracted										
Date Analyzed	7/27/2001		10/29/2002		??		4/25/1996		9/15/1996	
Analytical Method No.	8270		8270		625		625		8270	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	NA		NA		ND	5	ND	5	ND	5
Acenaphthylene	NA		NA		ND	5	ND	5	ND	5
Anthracene	NA		NA		ND	5	ND	5	ND	5
Benzo(a)anthracene	NA		NA		ND	5	ND	5	ND	5
Benzo(a)pyrene	NA		NA		ND	5	ND	5	ND	5
Benzo(b)fluoranthene	NA		NA		ND	5	ND	5	ND	5
Benzo(g,h,i)perylene	NA		NA		ND	5	ND	5	ND	5
Benzo(k)fluoranthene	NA		NA		ND	5	ND	5	ND	5
Chrysene	NA		NA		ND	5	ND	5	ND	5
Dibenzo(a,h)anthracene	NA		NA		ND	5	ND	5	ND	5
1,2-Dibromoethane	NA		NA		NA		NA		NA	
1,2-Dichloroethane	NA		NA		NA		NA		NA	
Fluoranthene	NA		NA		ND	5	ND	5	ND	5
Fluorene	NA		NA		ND	5	ND	5	ND	5
Indeno(1,2,3-cd)pyrene	NA		NA		ND	5	ND	5	ND	5
2 - Methylnaphthalene	ND	5	ND	5	NA		NA		NA	
Naphthalene	ND	5	ND	5	ND	5	ND	5	ND	5
Phenanthrene	NA		NA		ND	5	ND	5	ND	5
Pyrene	NA		NA		ND	5	ND	5	ND	5
METALS										
Sample ID	TPW-5		TPW-5		TPW-6		TPW-6		TPW-6	
Sample Depth (ft. b.g.s.)	23 - 28'		23 - 28'		21 - 26'		21 - 26'		21 - 26'	
Date Collected	7/25/2001		10/23/2002		12/9/1994		4/16/1996		9/4/1996	
Date Extracted										
Date Analyzed							4/23/1996			
Analytical Method No.							239.2			
Collection Method							Bailer			
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		NA		NA		ND	3	NA	

MDL = Method Detection Limit
ND = Not Detected
NA = Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-6		TPW-6		TPW-6		TPW-6		TPW-7A	
Sample Depth (ft. b.g.s.)	21 - 26'		21 - 26'		21 - 26'		21 - 26'		10 - 13.5'	
Date Collected	10/2/1997		4/19/1999		7/25/2001		10/23/2002		1/10/1995	
Date Extracted										
Date Analyzed	10/10/1997		4/22/1999		7/27/2001		10/29/2002		??	
Analytical Method No.	8020A		8020		8260		8260		602	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	ND	1	ND	1	ND	1	ND	1	ND	1
Toluene	ND	1	ND	1	ND	1	ND	1	ND	1
Ethylbenzene	ND	1	ND	1	ND	1	ND	1	ND	1
Total Xylenes	ND	3	ND	3	ND	3	ND	3	ND	3
MTBE	NA		NA		ND	5	ND	4	NA	
1,2,4 - Trimethylbenzene	NA		ND	1	ND	1	ND	1	NA	
1,3,5 - Trimethylbenzene	NA		ND	1	ND	1	ND	1	NA	
POLYNUCLEAR AROMATICS(PNAs)										
Sample ID	TPW-6		TPW-6		TPW-6		TPW-6		TPW-7A	
Sample Depth (ft. b.g.s.)	21 - 26'		21 - 26'		21 - 26'		21 - 26'		10 - 13.5'	
Date Collected	10/2/1997		4/19/1999		7/25/2001		10/23/2002		1/10/1995	
Date Extracted										
Date Analyzed	10/10/1997		4/22/1999		7/27/2001		10/29/2002		??	
Analytical Method No.	8270		8270		8270		8270		625	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	ND	5	ND	5	NA		NA		NA	
Acenaphthylene	ND	5	ND	5	NA		NA		NA	
Anthracene	ND	5	ND	5	NA		NA		NA	
Benzo(a)anthracene	ND	5	ND	5	NA		NA		NA	
Benzo(a)pyrene	ND	5	ND	5	NA		NA		NA	
Benzo(b)fluoranthene	ND	5	ND	5	NA		NA		NA	
Benzo(g,h,i)perylene	ND	5	ND	5	NA		NA		NA	
Benzo(k)fluoranthene	ND	5	ND	5	NA		NA		NA	
Chrysene	ND	5	ND	5	NA		NA		NA	
Dibenzo(a,h)anthracene	ND	5	ND	5	NA		NA		NA	
1,2-Dibromoethane	NA		ND	1	NA		NA		NA	
1,2-Dichloroethane	NA		ND	1	NA		NA		NA	
Fluoranthene	ND	5	ND	5	NA		NA		NA	
Fluorene	ND	5	ND	5	NA		NA		NA	
Indeno(1,2,3-cd)pyrene	ND	5	ND	5	NA		NA		NA	
2 - Methylnaphthalene	ND	5	ND	5	ND	5	ND	5	NA	
Naphthalene	ND	5	ND	5	ND	5	ND	5	NA	
Phenanthrene	ND	5	ND	5	NA		NA		NA	
Pyrene	ND	5	ND	5	NA		NA		NA	
METALS										
Sample ID	TPW-6		TPW-6		TPW-6		TPW-6		TPW-7A	
Sample Depth (ft. b.g.s.)	21 - 26'		21 - 26'		21 - 26'		21 - 26'		10 - 13.5'	
Date Collected	10/2/1997		4/19/1999		7/25/2001		10/23/2002		1/10/1995	
Date Extracted										
Date Analyzed			4/22/1999							
Analytical Method No.			239.2							
Collection Method			Bailer							
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		ND	3	NA		NA		NA	

MDL = Method Detection Limit
ND = Not Detected
NA = Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-7A		TPW-7A		TPW-7B		TPW-8A		TPW-8A	
Sample Depth (ft. b.g.s.)	10 - 13.5'		10 - 13.5'		65 - 70'		3 - 8'		3 - 8'	
Date Collected	7/25/2001		10/24/2002		1/10/1995		1/10/1995		4/3/1996	
Date Extracted										
Date Analyzed	7/26/2001		10/29/2002		??		??		4/11/1996	
Analytical Method No.	8260		8260		602		602		602	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	ND	1	ND	1	ND	1	ND	1	ND	5
Toluene	ND	1	ND	1	ND	1	ND	1	ND	1
Ethylbenzene	ND	1	ND	1	ND	1	ND	1	ND	1
Total Xylenes	ND	3	ND	3	ND	3	3.6	3	ND	3
MTBE	ND	5	ND	4	NA		NA		NA	
1,2,4 - Trimethylbenzene	ND	1	ND	1	NA		NA		NA	
1,3,5 - Trimethylbenzene	ND	1	ND	1	NA		NA		NA	
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	TPW-7A		TPW-7A		TPW-7B		TPW-8A		TPW-8A	
Sample Depth (ft. b.g.s.)	10 - 13.5'		10 - 13.5'		65 - 70'		3 - 8'		3 - 8'	
Date Collected	7/25/2001		10/24/2002		1/10/1995		1/10/1995		4/3/1996	
Date Extracted										
Date Analyzed	7/26/2001		10/29/2002		??		??		4/11/1996	
Analytical Method No.	625		625		625		625		625	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	NA		NA		NA		ND	5	ND	5
Acenaphthylene	NA		NA		NA		ND	5	ND	5
Anthracene	NA		NA		NA		ND	5	ND	5
Benzo(a)anthracene	NA		NA		NA		ND	5	ND	5
Benzo(a)pyrene	NA		NA		NA		ND	5	ND	5
Benzo(b)fluoranthene	NA		NA		NA		ND	5	ND	5
Benzo(g,h,i)perylene	NA		NA		NA		ND	5	ND	5
Benzo(k)fluoranthene	NA		NA		NA		ND	5	ND	5
Chrysene	NA		NA		NA		ND	5	ND	5
Dibenzo(a,h)anthracene	NA		NA		NA		ND	5	ND	5
1,2-Dibromoethane	NA		NA		NA		NA		NA	
1,2-Dichloroethane	NA		NA		NA		NA		NA	
Fluoranthene	NA		NA		NA		ND	5	ND	5
Fluorene	NA		NA		NA		ND	5	ND	5
Indeno(1,2,3-cd)pyrene	NA		NA		NA		ND	5	ND	5
2 - Methylnaphthalene	ND	5	ND	5	NA		NA		NA	
Naphthalene	ND	5	ND	5	NA		ND	5	ND	5
Phenanthrene	NA		NA		NA		ND	5	ND	5
Pyrene	NA		NA		NA		ND	5	ND	5
METALS										
Sample ID	TPW-7A		TPW-7A		TPW-7B		TPW-8A		TPW-8A	
Sample Depth (ft. b.g.s.)	10 - 13.5'		10 - 13.5'		65 - 70'		3 - 8'		3 - 8'	
Date Collected	7/25/2001		10/24/2002		1/10/1995		1/10/1995		4/3/1996	
Date Extracted										
Date Analyzed									4/8/1996	
Analytical Method No.									239.2	
Collection Method									Bailer	
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		NA		NA		NA		ND	3

MDL = Method Detection Limit
ND = Not Detected
NA = Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-8A		TPW-8A		TPW-8A		TPW-8B		TPW-8C	
Sample Depth (ft. b.g.s.)	3 - 8'		3 - 8'		3 - 8'		10 - 15'		70 - 75'	
Date Collected	10/2/1997		4/19/1999		7/25/2001		1/10/1995		1/26/1996	
Date Extracted										
Date Analyzed	10/13/1997		4/22/1999		7/26/2001		??		??	
Analytical Method No.	8020A		8020		8260		602		602	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	1	1	ND	1	1.2	1	ND	1	ND	1
Toluene	ND	1	ND	1	ND	1	ND	1	ND	1
Ethylbenzene	1	1	ND	1	ND	1	ND	1	ND	1
Total Xylenes	ND	3	ND	3	ND	3	ND	3	ND	3
MTBE	NA		NA		ND	5	NA		NA	
1,2,4 - Trimethylbenzene	NA		ND	1	ND	1	NA		NA	
1,3,5 - Trimethylbenzene	NA		ND	1	ND	1	NA		NA	
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	TPW-8A		TPW-8A		TPW-8A		TPW-8B		TPW-8C	
Sample Depth (ft. b.g.s.)	3 - 8'		3 - 8'		3 - 8'		10 - 15'		70 - 75'	
Date Collected	10/2/1997		4/19/1999		7/25/2001		1/10/1995		1/26/1996	
Date Extracted										
Date Analyzed	10/13/1997		4/22/1999		7/26/2001		??		??	
Analytical Method No.	625		625		625		625		625	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	ND	5	ND	5	NA		NA		ND	5
Acenaphthylene	ND	5	ND	5	NA		NA		ND	5
Anthracene	ND	5	ND	5	NA		NA		ND	5
Benzo(a)anthracene	ND	5	ND	5	NA		NA		ND	5
Benzo(a)pyrene	ND	5	ND	5	NA		NA		ND	5
Benzo(b)fluoranthene	ND	5	ND	5	NA		NA		ND	5
Benzo(g,h,i)perylene	ND	5	ND	5	NA		NA		ND	5
Benzo(k)fluoranthene	ND	5	ND	5	NA		NA		ND	5
Chrysene	ND	5	ND	5	NA		NA		ND	5
Dibenzo(a,h)anthracene	ND	5	ND	5	NA		NA		ND	5
1,2-Dibromoethane	NA		ND	1	NA		NA		NA	
1,2-Dichloroethane	NA		ND	1	NA		NA		NA	
Fluoranthene	ND	5	ND	5	NA		NA		ND	5
Fluorene	ND	5	ND	5	NA		NA		ND	5
Indeno(1,2,3-cd)pyrene	ND	5	ND	5	NA		NA		ND	5
2 - Methylnaphthalene	ND	5	ND	5	ND	5	NA		NA	
Naphthalene	ND	5	ND	5	ND	5	NA		ND	5
Phenanthrene	ND	5	ND	5	NA		NA		ND	5
Pyrene	ND	5	ND	5	NA		NA		ND	5
METALS										
Sample ID	TPW-8A		TPW-8A		TPW-8A		TPW-8B		TPW-8C	
Sample Depth (ft. b.g.s.)	3 - 8'		3 - 8'		3 - 8'		10 - 15'		70 - 75'	
Date Collected	10/2/1997		4/19/1999		7/25/2001		1/10/1995		1/26/1996	
Date Extracted										
Date Analyzed			4/22/1999						??	
Analytical Method No.			239.2						239.2	
Collection Method			Bailer						Bailer	
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		ND	3	NA		NA		ND	3

MDL = Method Detection Limit
ND = Not Detected
NA = Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-9		TPW-9		TPW-9		TPW-9		TPW-9	
Sample Depth (ft. b.g.s.)	24 - 29'		24 - 29'		24 - 29'		24 - 29'		24 - 29'	
Date Collected	12/8/1994		4/16/1996		9/4/1996		10/2/1997		4/19/1999	
Date Extracted										
Date Analyzed	??		4/25/1996		9/16/1996		10/10/1997		4/22/1999	
Analytical Method No.	602		602		8020A		8020A		8020	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	ND	1	ND	5	ND	1	ND	1	ND	1
Toluene	ND	1	ND	1	ND	1	ND	1	ND	1
Ethylbenzene	ND	1	ND	1	ND	1	ND	1	ND	1
Total Xylenes	ND	3	ND	3	ND	3	ND	3	ND	3
MTBE	NA		NA		NA		NA		NA	
1,2,4 - Trimethylbenzene	NA		NA		NA		NA		ND	1
1,3,5 - Trimethylbenzene	NA		NA		NA		NA		ND	1
POLYNUCLEAR AROMATICS(PNA's)										
Sample ID	TPW-9		TPW-9		TPW-9		TPW-9		TPW-9	
Sample Depth (ft. b.g.s.)	24 - 29'		24 - 29'		24 - 29'		24 - 29'		24 - 29'	
Date Collected	12/8/1994		4/16/1996		9/4/1996		10/2/1997		4/19/1999	
Date Extracted										
Date Analyzed	??		4/25/1996		9/16/1996		10/10/1997		4/22/1999	
Analytical Method No.	625		625		625		625		625	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	ND	5	ND	5	ND	5	ND	5	ND	5
Acenaphthylene	ND	5	ND	5	ND	5	ND	5	ND	5
Anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(a)anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(a)pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(b)fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(g,h,i)perylene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(k)fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Chrysene	ND	5	ND	5	ND	5	ND	5	ND	5
Dibenzo(a,h)anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
1,2-Dibromoethane	NA		NA		NA		NA		ND	1
1,2-Dichloroethane	NA		NA		NA		NA		ND	1
Fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Fluorene	ND	5	ND	5	ND	5	ND	5	ND	5
Indeno(1,2,3-cd)pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
2 - Methylnaphthalene	NA		NA		NA		ND	5	ND	5
Naphthalene	ND	5	ND	5	ND	5	ND	5	ND	5
Phenanthrene	ND	5	ND	5	ND	5	ND	5	ND	5
Pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
METALS										
Sample ID	TPW-9		TPW-9		TPW-9		TPW-9		TPW-9	
Sample Depth (ft. b.g.s.)	24 - 29'		24 - 29'		24 - 29'		24 - 29'		24 - 29'	
Date Collected	12/8/1994		4/16/1996		9/4/1996		10/2/1997		4/19/1999	
Date Extracted										
Date Analyzed			4/23/1996						4/22/1999	
Analytical Method No.			239.2						239.2	
Collection Method			Bailer						Bailer	
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		ND	3	NA		NA		ND	3

MDL = Method Detection Limit
ND = Not Detected
NA = Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-9		TPW-9		TPW-10		TPW-10		TPW-10	
Sample Depth (ft. b.g.s.)	24 - 29'		24 - 29'		0 - 5'		0 - 5'		0 - 5'	
Date Collected	7/25/2001		10/23/2002		4/3/1996		9/4/1996		10/2/1997	
Date Extracted										
Date Analyzed	7/27/2001		10/29/2002		4/11/1996		9/16/1996		10/13/1997	
Analytical Method No.	8260		8260		602		602		602	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	ND	1	ND	1	21	5	ND	1	7	1
Toluene	ND	1	ND	1	2	1	ND	1	ND	1
Ethylbenzene	ND	1	ND	1	18	1	ND	1	7	1
Total Xylenes	ND	3	ND	3	26	3	ND	3	ND	3
MTBE	ND	5	ND	4	NA		NA		NA	
1,2,4 - Trimethylbenzene	ND	1	ND	1	NA		NA		NA	
1,3,5 - Trimethylbenzene	ND	1	ND	1	NA		NA		NA	
POLYNUCLEAR AROMATICS (PNA's)										
Sample ID	TPW-9		TPW-9		TPW-10		TPW-10		TPW-10	
Sample Depth (ft. b.g.s.)	24 - 29'		24 - 29'		0 - 5'		0 - 5'		0 - 5'	
Date Collected	7/25/2001		10/23/2002		4/3/1996		9/4/1996		10/2/1997	
Date Extracted										
Date Analyzed	7/27/2001		10/29/2002		4/11/1996		9/16/1996		10/13/1997	
Analytical Method No.	625		625		625		625		625	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	NA		NA		ND	5	ND	5	ND	5
Acenaphthylene	NA		NA		ND	5	ND	5	ND	5
Anthracene	NA		NA		ND	5	ND	5	ND	5
Benzo(a)anthracene	NA		NA		ND	5	ND	5	ND	5
Benzo(a)pyrene	NA		NA		ND	5	ND	5	ND	5
Benzo(b)fluoranthene	NA		NA		ND	5	ND	5	ND	5
Benzo(g,h,i)perylene	NA		NA		ND	5	ND	5	ND	5
Benzo(k)fluoranthene	NA		NA		ND	5	ND	5	ND	5
Chrysene	NA		NA		ND	5	ND	5	ND	5
Dibenzo(a,h)anthracene	NA		NA		ND	5	ND	5	ND	5
1,2-Dibromoethane	NA		NA		NA		NA		NA	
1,2-Dichloroethane	NA		NA		NA		NA		NA	
Fluoranthene	NA		NA		ND	5	ND	5	ND	5
Fluorene	NA		NA		ND	5	ND	5	ND	5
Indeno(1,2,3-cd)pyrene	NA		NA		ND	5	ND	5	ND	5
2 - Methylnaphthalene	ND	5	ND	5	NA		NA		46	5
Naphthalene	ND	5	ND	5	37	5	43	5	36	5
Phenanthrene	NA		NA		ND	5	ND	5	ND	5
Pyrene	NA		NA		ND	5	ND	5	ND	5
METALS										
Sample ID	TPW-9		TPW-9		TPW-10		TPW-10		TPW-10	
Sample Depth (ft. b.g.s.)	24 - 29'		24 - 29'		0 - 5'		0 - 5'		0 - 5'	
Date Collected	7/25/2001		10/23/2002		4/3/1996		9/4/1996		10/2/1997	
Date Extracted										
Date Analyzed					4/8/1996					
Analytical Method No.					239.2					
Collection Method					Bailer					
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		NA		ND	3	NA		NA	

MDL = Method Detection Limit
ND = Not Detected
NA = Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-10		TPW-10		TPW-10		TPW-11		TPW-11	
Sample Depth (ft. b.g.s.)	0 - 5'		0 - 5'		0 - 5'		0 - 5'		0 - 5'	
Date Collected	4/19/1999		7/25/2001		4/17/2003		4/3/1996		9/4/1996	
Date Extracted										
Date Analyzed	4/22/1999		7/27/2001		4/22/2003		4/11/1996		9/16/1996	
Analytical Method No.	8020		8020		8260B		602		602	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	3	1	27	1	ND	1	ND	5	ND	1
Toluene	ND	1	ND	1	ND	1	ND	1	ND	1
Ethylbenzene	ND	1	23	1	ND	1	ND	1	ND	1
Total Xylenes	ND	3	4.4	3	ND	2	ND	3	ND	3
MTBE	NA		14	5	ND	4	NA		NA	
1,2,4 - Trimethylbenzene	ND	1	7.4	1	ND	1	NA		NA	
1,3,5 - Trimethylbenzene	ND	1	1.3	1	ND	1	NA		NA	
POLYNUCLEAR AROMATICS(PNAs)										
Sample ID	TPW-10		TPW-10		TPW-10		TPW-11		TPW-11	
Sample Depth (ft. b.g.s.)	0 - 5'		0 - 5'		0 - 5'		0 - 5'		0 - 5'	
Date Collected	4/19/1999		7/25/2001		4/17/2003		4/3/1996		9/4/1996	
Date Extracted										
Date Analyzed	4/22/1999		7/27/2001		4/28/2003		4/11/1996		9/16/1996	
Analytical Method No.	625		625		8270C		625		625	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	ND	5	ND	5	ND	5	ND	5	ND	5
Acenaphthylene	ND	5	ND	5	ND	5	ND	5	ND	5
Anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(a)anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(a)pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(b)fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(g,h,i)perylene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(k)fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Chrysene	ND	5	ND	5	ND	5	ND	5	ND	5
Dibenzo(a,h)anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
1,2-Dibromoethane	ND	1	NA		NA		NA		NA	
1,2-Dichloroethane	ND	1	NA		NA		NA		NA	
Fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Fluorene	ND	5	ND	5	ND	5	ND	5	ND	5
Indeno(1,2,3-cd)pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
2 - Methylnaphthalene	ND	5	ND	5	ND	5	NA		NA	
Naphthalene	ND	5	5.7	5	ND	5	ND	5	ND	5
Phenanthrene	ND	5	ND	5	ND	5	ND	5	ND	5
Pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
METALS										
Sample ID	TPW-10		TPW-10		TPW-10		TPW-11		TPW-11	
Sample Depth (ft. b.g.s.)	0 - 5'		0 - 5'		0 - 5'		0 - 5'		0 - 5'	
Date Collected	4/19/1999		7/25/2001		4/17/2003		4/3/1996		9/4/1996	
Date Extracted										
Date Analyzed	4/22/1999						4/8/1996			
Analytical Method No.	239.2						239.2			
Collection Method	Bailer						Bailer			
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	ND	3	NA		NA		ND	3	NA	

MDL = Method Detection Limit
ND = Not Detected
NA = Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-11		TPW-11		TPW-12		TPW-12		TPW-12	
Sample Depth (ft. b.g.s.)	0 - 5'		0 - 5'		0 - 5'		0 - 5'		0 - 5'	
Date Collected	4/19/1999		7/25/2001		4/3/1996		9/4/1996		10/2/1997	
Date Extracted										
Date Analyzed	4/22/1999		7/27/2001		4/11/1996		9/15/1996		10/10/1997	
Analytical Method No.	8020		8260		602		602		8020A	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	ND	1	ND	1	ND	5	ND	1	ND	1
Toluene	ND	1	ND	1	ND	1	ND	1	ND	1
Ethylbenzene	ND	1	ND	1	ND	1	ND	1	ND	1
Total Xylenes	ND	3	ND	3	ND	3	ND	3	ND	3
MTBE	NA		ND	5	NA		NA		NA	
1,2,4 - Trimethylbenzene	ND	1	ND	1	NA		NA		NA	
1,3,5 - Trimethylbenzene	ND	1	ND	1	NA		NA		NA	
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	TPW-11		TPW-11		TPW-12		TPW-12		TPW-12	
Sample Depth (ft. b.g.s.)	0 - 5'		0 - 5'		0 - 5'		0 - 5'		0 - 5'	
Date Collected	4/19/1999		7/25/2001		4/3/1996		9/4/1996		10/2/1997	
Date Extracted										
Date Analyzed	4/22/1999		7/27/2001		4/11/1996		9/15/1996		10/10/1997	
Analytical Method No.	625		625		625		625		625	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	ND	5	NA		ND	5	ND	5	ND	5
Acenaphthylene	ND	5	NA		ND	5	ND	5	ND	5
Anthracene	ND	5	NA		ND	5	ND	5	ND	5
Benzo(a)anthracene	ND	5	NA		ND	5	ND	5	ND	5
Benzo(a)pyrene	ND	5	NA		ND	5	ND	5	ND	5
Benzo(b)fluoranthene	ND	5	NA		ND	5	ND	5	ND	5
Benzo(g,h,i)perylene	ND	5	NA		ND	5	ND	5	ND	5
Benzo(k)fluoranthene	ND	5	NA		ND	5	ND	5	ND	5
Chrysene	ND	5	NA		ND	5	ND	5	ND	5
Dibenzo(a,h)anthracene	ND	5	NA		ND	5	ND	5	ND	5
1,2-Dibromoethane	ND	1	NA		NA		NA		NA	
1,2-Dichloroethane	ND	1	NA		NA		NA		NA	
Fluoranthene	ND	5	NA		ND	5	ND	5	ND	5
Fluorene	ND	5	NA		ND	5	ND	5	ND	5
Indeno(1,2,3-cd)pyrene	ND	5	NA		ND	5	ND	5	ND	5
2 - Methylnaphthalene	ND	5	ND	5	NA		NA		ND	5
Naphthalene	ND	5	ND	5	ND	5	ND	5	ND	5
Phenanthrene	ND	5	NA		ND	5	ND	5	ND	5
Pyrene	ND	5	NA		ND	5	ND	5	ND	5
METALS										
Sample ID	TPW-11		TPW-11		TPW-12		TPW-12		TPW-12	
Sample Depth (ft. b.g.s.)	0 - 5'		0 - 5'		0 - 5'		0 - 5'		0 - 5'	
Date Collected	4/19/1999		7/25/2001		4/3/1996		9/4/1996		10/2/1997	
Date Extracted										
Date Analyzed	4/22/1999				4/8/1996					
Analytical Method No.	239.2				239.2					
Collection Method	Bailer				Bailer					
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	ND	3	NA		ND	3	NA		NA	

MDL = Method Detection Limit
ND = Not Detected
NA = Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-12		TPW-13		TPW-13		TPW-13		TPW-13	
Sample Depth (ft. b.g.s.)	0 - 5'		1 - 6'		1 - 6'		1 - 6'		1 - 6'	
Date Collected	7/25/2001		12/18/1986		4/3/1996		9/4/1996		10/2/1997	
Date Extracted										
Date Analyzed	7/27/2001		??		4/11/1996		9/15/1996		10/13/1997	
Analytical Method No.	8260		602		602		602		8020A	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	ND	1	51	?	6	5	ND	1	16	1
Toluene	ND	1	1.6	?	ND	1	ND	1	ND	1
Ethylbenzene	ND	1	8.4	?	ND	1	ND	1	ND	1
Total Xylenes	ND	3	1.8	?	ND	3	ND	3	ND	3
MTBE	ND	5	NA		NA		NA		NA	
1,2,4 - Trimethylbenzene	ND	1	NA		NA		NA		NA	
1,3,5 - Trimethylbenzene	ND	1	NA		NA		NA		NA	
POLYNUCLEAR AROMATICS(PNA's)										
Sample ID	TPW-12		TPW-13		TPW-13		TPW-13		TPW-13	
Sample Depth (ft. b.g.s.)	0 - 5'		1 - 6'		1 - 6'		1 - 6'		1 - 6'	
Date Collected	7/25/2001		12/18/1986		4/3/1996		9/4/1996		10/2/1997	
Date Extracted										
Date Analyzed	7/27/2001		??		4/11/1996		9/15/1996		10/13/1997	
Analytical Method No.	625		625		625		625		625	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	NA		NA		ND	5	ND	5	ND	5
Acenaphthylene	NA		NA		ND	5	ND	5	ND	5
Anthracene	NA		NA		ND	5	ND	5	ND	5
Benzo(a)anthracene	NA		NA		ND	5	ND	5	ND	5
Benzo(a)pyrene	NA		NA		ND	5	ND	5	ND	5
Benzo(b)fluoranthene	NA		NA		ND	5	ND	5	ND	5
Benzo(g,h,i)perylene	NA		NA		ND	5	ND	5	ND	5
Benzo(k)fluoranthene	NA		NA		ND	5	ND	5	ND	5
Chrysene	NA		NA		ND	5	ND	5	ND	5
Dibenzo(a,h)anthracene	NA		NA		ND	5	ND	5	ND	5
1,2-Dibromoethane	NA		NA		NA		NA		NA	
1,2-Dichloroethane	NA		NA		NA		NA		NA	
Fluoranthene	NA		NA		ND	5	ND	5	ND	5
Fluorene	NA		NA		ND	5	ND	5	ND	5
Indeno(1,2,3-cd)pyrene	NA		NA		ND	5	ND	5	ND	5
2 - Methylnaphthalene	ND	5	NA		NA		NA		ND	5
Naphthalene	ND	5	NA		ND	5	ND	5	ND	5
Phenanthrene	NA		NA		ND	5	ND	5	ND	5
Pyrene	NA		NA		ND	5	ND	5	ND	5
METALS										
Sample ID	TPW-12		TPW-13		TPW-13		TPW-13		TPW-13	
Sample Depth (ft. b.g.s.)	0 - 5'		1 - 6'		1 - 6'		1 - 6'		1 - 6'	
Date Collected	7/25/2001		12/18/1986		4/3/1996		9/4/1996		10/2/1997	
Date Extracted										
Date Analyzed					4/8/1996					
Analytical Method No.					239.2					
Collection Method					Bailer					
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		NA		ND	3	NA		NA	

MDL = Method Detection Limit
ND = Not Detected
NA = Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-13		TPW-13		TPW-13		TPW-14		TPW-14	
Sample Depth (ft. b.g.s.)	1 - 6'		1 - 6'		1 - 6'		1 - 6'		1 - 6'	
Date Collected	4/19/1999		7/25/2001		10/24/2002		12/18/1986		4/3/1996	
Date Extracted										
Date Analyzed	4/27/1999		7/27/2001		10/29/2002		??		4/11/1996	
Analytical Method No.	8020		8260		8260		602		602	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	5	1	8.6	1	23	1	5.4	?	ND	5
Toluene	ND	1	ND	1	ND	1	8.2	?	ND	1
Ethylbenzene	ND	1	ND	1	ND	1	3.3	?	ND	1
Total Xylenes	ND	3	ND	3	ND	3	5.3	?	ND	3
MTBE	NA		ND	5	ND	4	NA		NA	
1,2,4 - Trimethylbenzene	ND	1	ND	1	ND	1	NA		NA	
1,3,5 - Trimethylbenzene	ND	1	ND	1	ND	1	NA		NA	
POLYNUCLEAR AROMATICS(PNAs)										
Sample ID	TPW-13		TPW-13		TPW-13		TPW-14		TPW-14	
Sample Depth (ft. b.g.s.)	1 - 6'		1 - 6'		1 - 6'		1 - 6'		1 - 6'	
Date Collected	4/19/1999		7/25/2001		10/24/2002		12/18/1986		4/3/1996	
Date Extracted										
Date Analyzed	4/27/1999		7/27/2001		10/29/2002		??		4/11/1996	
Analytical Method No.	625		625		625		625		625	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	ND	5	ND	5	ND	5	NA		ND	5
Acenaphthylene	ND	5	ND	5	ND	5	NA		ND	5
Anthracene	ND	5	ND	5	ND	5	NA		ND	5
Benzo(a)anthracene	ND	5	ND	5	ND	5	NA		ND	5
Benzo(a)pyrene	ND	5	ND	5	ND	5	NA		ND	5
Benzo(b)fluoranthene	ND	5	ND	5	ND	5	NA		ND	5
Benzo(g,h,i)perylene	ND	5	ND	5	ND	5	NA		ND	5
Benzo(k)fluoranthene	ND	5	ND	5	ND	5	NA		ND	5
Chrysene	ND	5	ND	5	ND	5	NA		ND	5
Dibenzo(a,h)anthracene	ND	5	ND	5	ND	5	NA		ND	5
1,2-Dibromoethane	ND	1	NA		NA		NA		NA	
1,2-Dichloroethane	ND	1	NA		NA		NA		NA	
Fluoranthene	ND	5	ND	5	ND	5	NA		ND	5
Fluorene	ND	5	ND	5	ND	5	NA		ND	5
Indeno(1,2,3-cd)pyrene	ND	5	ND	5	ND	5	NA		ND	5
2 - Methylnaphthalene	ND	5	11	5	ND	5	NA		NA	
Naphthalene	ND	5	ND	5	ND	5	NA		ND	5
Phenanthrene	ND	5	ND	5	ND	5	NA		ND	5
Pyrene	ND	5	ND	5	ND	5	NA		ND	5
METALS										
Sample ID	TPW-13		TPW-13		TPW-13		TPW-14		TPW-14	
Sample Depth (ft. b.g.s.)	1 - 6'		1 - 6'		1 - 6'		1 - 6'		1 - 6'	
Date Collected	4/19/1999		7/25/2001		10/24/2002		12/18/1986		4/3/1996	
Date Extracted										
Date Analyzed	4/22/1999								4/8/1996	
Analytical Method No.	239.2								239.2	
Collection Method	Bailer								Bailer	
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	ND	3	NA		NA		NA		ND	3

MDL = Method Detection Limit
ND = Not Detected
NA = Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-14		TPW-14		TPW-14		TPW-14		TPW-14	
Sample Depth (ft. b.g.s.)	1 - 6'		1 - 6'		1 - 6'		1 - 6'		1 - 6'	
Date Collected	9/4/1996		10/2/1997		4/19/1999		7/25/2001		10/24/2002	
Date Extracted										
Date Analyzed	9/16/1996		10/10/1997		4/22/1999		7/27/2001		10/29/2002	
Analytical Method No.	8020A		8020A		8020		8260		8260	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	ND	1	ND	1	ND	1	ND	1	ND	1
Toluene	ND	1	ND	1	ND	1	ND	1	ND	1
Ethylbenzene	ND	1	ND	1	ND	1	ND	1	ND	1
Total Xylenes	ND	3	ND	3	ND	3	ND	3	ND	3
MTBE	NA		NA		NA		ND	5	ND	4
1,2,4 - Trimethylbenzene	NA		NA		ND	1	ND	1	ND	1
1,3,5 - Trimethylbenzene	NA		NA		ND	1	ND	1	ND	1
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	TPW-14		TPW-14		TPW-14		TPW-14		TPW-14	
Sample Depth (ft. b.g.s.)	1 - 6'		1 - 6'		1 - 6'		1 - 6'		1 - 6'	
Date Collected	9/4/1996		10/2/1997		4/19/1999		7/25/2001		10/24/2002	
Date Extracted										
Date Analyzed	9/16/1996		10/10/1997		4/22/1999		7/27/2001		10/29/2002	
Analytical Method No.	8270		8270		8270		8270		8270	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	ND	5	ND	5	ND	5	NA		NA	
Acenaphthylene	ND	5	ND	5	ND	5	NA		NA	
Anthracene	ND	5	ND	5	ND	5	NA		NA	
Benzo(a)anthracene	ND	5	ND	5	ND	5	NA		NA	
Benzo(a)pyrene	ND	5	ND	5	ND	5	NA		NA	
Benzo(b)fluoranthene	ND	5	ND	5	ND	5	NA		NA	
Benzo(g,h,i)perylene	ND	5	ND	5	ND	5	NA		NA	
Benzo(k)fluoranthene	ND	5	ND	5	ND	5	NA		NA	
Chrysene	ND	5	ND	5	ND	5	NA		NA	
Dibenzo(a,h)anthracene	ND	5	ND	5	ND	5	NA		NA	
1,2-Dibromoethane	NA		NA		ND	1	NA		NA	
1,2-Dichloroethane	NA		NA		ND	1	NA		NA	
Fluoranthene	ND	5	ND	5	ND	5	NA		NA	
Fluorene	ND	5	ND	5	ND	5	NA		NA	
Indeno(1,2,3-cd)pyrene	ND	5	ND	5	ND	5	NA		NA	
2 - Methylnaphthalene	NA		ND	5	ND	5	ND	5	ND	5
Naphthalene	ND	5	ND	5	ND	5	ND	5	ND	5
Phenanthrene	ND	5	ND	5	ND	5	NA		NA	
Pyrene	ND	5	ND	5	ND	5	NA		NA	
METALS										
Sample ID	TPW-14		TPW-14		TPW-14		TPW-14		TPW-14	
Sample Depth (ft. b.g.s.)	1 - 6'		1 - 6'		1 - 6'		1 - 6'		1 - 6'	
Date Collected	9/4/1996		10/2/1997		4/19/1999		7/25/2001		10/24/2002	
Date Extracted										
Date Analyzed					4/22/1999					
Analytical Method No.					239.2					
Collection Method					Bailer					
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		NA		ND	3	NA		NA	

MDL = Method Detection Limit
ND = Not Detected
NA = Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-15		TPW-15		TPW-15		TPW-15		TPW-15	
Sample Depth (ft. b.g.s.)	1 - 11'		1 - 11'		1 - 11'		1 - 11'		1 - 11'	
Date Collected	12/18/1996		4/3/1996		10/2/1997		4/19/1999		10/24/2002	
Date Extracted										
Date Analyzed	??		4/11/1996		10/10/1997		4/22/1999		10/30/2002	
Analytical Method No.	602		602		8020A		8020		8260	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	ND	?	ND	5	ND	1	ND	1	ND	1
Toluene	0.9	?	ND	1	ND	1	ND	1	ND	1
Ethylbenzene	ND	?	ND	1	ND	1	ND	1	ND	1
Total Xylenes	ND	?	ND	3	ND	3	ND	3	ND	3
MTBE	NA		NA		NA		NA		ND	4
1,2,4 - Trimethylbenzene	NA		NA		NA		ND	1	ND	1
1,3,5 - Trimethylbenzene	NA		NA		NA		ND	1	ND	1
POLYNUCLEAR AROMATICS (PNA's)										
Sample ID	TPW-15		TPW-15		TPW-15		TPW-15		TPW-15	
Sample Depth (ft. b.g.s.)	1 - 11'		1 - 11'		1 - 11'		1 - 11'		1 - 11'	
Date Collected	12/18/1996		4/3/1996		10/2/1997		4/19/1999		10/24/2002	
Date Extracted										
Date Analyzed			4/11/1996		10/10/1997		4/22/1999		10/30/2002	
Analytical Method No.			8270		8270		8270		8270	
Collection Method			Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	NA		ND	5	ND	5	ND	5	NA	
Acenaphthylene	NA		ND	5	ND	5	ND	5	NA	
Anthracene	NA		ND	5	ND	5	ND	5	NA	
Benzo(a)anthracene	NA		ND	5	ND	5	ND	5	NA	
Benzo(a)pyrene	NA		ND	5	ND	5	ND	5	NA	
Benzo(b)fluoranthene	NA		ND	5	ND	5	ND	5	NA	
Benzo(g,h,i)perylene	NA		ND	5	ND	5	ND	5	NA	
Benzo(k)fluoranthene	NA		ND	5	ND	5	ND	5	NA	
Chrysene	NA		ND	5	ND	5	ND	5	NA	
Dibenzo(a,h)anthracene	NA		ND	5	ND	5	ND	5	NA	
1,2-Dibromoethane	NA		NA		NA		ND	1	NA	
1,2-Dichloroethane	NA		NA		NA		ND	1	NA	
Fluoranthene	NA		ND	5	ND	5	ND	5	NA	
Fluorene	NA		ND	5	ND	5	ND	5	NA	
Indeno(1,2,3-cd)pyrene	NA		ND	5	ND	5	ND	5	NA	
2 - Methylnaphthalene	NA		NA		ND	5	ND	5	ND	5
Naphthalene	NA		ND	5	ND	5	ND	5	ND	5
Phenanthrene	NA		ND	5	ND	5	ND	5	NA	
Pyrene	NA		ND	5	ND	5	ND	5	NA	
METALS										
Sample ID	TPW-15		TPW-15		TPW-15		TPW-15		TPW-15	
Sample Depth (ft. b.g.s.)	1 - 11'		1 - 11'		1 - 11'		1 - 11'		1 - 11'	
Date Collected	12/18/1996		4/3/1996		10/2/1997		4/19/1999		10/24/2002	
Date Extracted										
Date Analyzed			4/8/1996				4/22/1999			
Analytical Method No.			239.2				239.2			
Collection Method			Bailer				Bailer			
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		ND	3	NA		ND	3	NA	

MDL - Method Detection Limit
ND - Not Detected
NA - Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-16		TPW-16		TPW-16		TPW-16		TPW-16	
Sample Depth (ft. b.g.s.)	2.2 - 5.2'		2.2 - 5.2'		2.2 - 5.2'		2.2 - 5.2'		2.2 - 5.2'	
Date Collected	9/4/1996		10/2/1997		4/19/1999		7/25/2001		10/24/2002	
Date Extracted										
Date Analyzed	9/15/1996		10/10/1997		4/22/1999		7/27/2001		10/30/2002	
Analytical Method No.	8020A		8020A		8020		8020		8260	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	ND	1	ND	1	ND	1	ND	1	ND	1
Toluene	ND	1	ND	1	ND	1	ND	1	ND	1
Ethylbenzene	ND	1	ND	1	ND	1	ND	1	ND	1
Total Xylenes	ND	3	ND	3	ND	3	ND	3	ND	3
MTBE	NA		NA		NA		ND	5	ND	4
1,2,4 - Trimethylbenzene	NA		NA		ND	1	ND	1	ND	1
1,3,5 - Trimethylbenzene	NA		NA		ND	1	ND	1	ND	1
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	TPW-16		TPW-16		TPW-16		TPW-16		TPW-16	
Sample Depth (ft. b.g.s.)	2.2 - 5.2'		2.2 - 5.2'		2.2 - 5.2'		2.2 - 5.2'		2.2 - 5.2'	
Date Collected	9/4/1996		10/2/1997		4/19/1999		7/25/2001		10/24/2002	
Date Extracted										
Date Analyzed	9/15/1996		10/10/1997		4/22/1999		7/27/2001		10/30/2002	
Analytical Method No.	8270		8270		8270		8270		8270	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	ND	5	ND	5	ND	5	ND	5	NA	
Acenaphthylene	ND	5	ND	5	ND	5	ND	5	NA	
Anthracene	ND	5	ND	5	ND	5	ND	5	NA	
Benzo(a)anthracene	ND	5	ND	5	ND	5	ND	5	NA	
Benzo(a)pyrene	ND	5	ND	5	ND	5	ND	5	NA	
Benzo(b)fluoranthene	ND	5	ND	5	ND	5	ND	5	NA	
Benzo(g,h,i)perylene	ND	5	ND	5	ND	5	ND	5	NA	
Benzo(k)fluoranthene	ND	5	ND	5	ND	5	ND	5	NA	
Chrysene	ND	5	ND	5	ND	5	ND	5	NA	
Dibenzo(a,h)anthracene	ND	5	ND	5	ND	5	ND	5	NA	
1,2-Dibromoethane	NA		NA		ND	1	NA		NA	
1,2-Dichloroethane	NA		NA		ND	1	NA		NA	
Fluoranthene	ND	5	ND	5	ND	5	ND	5	NA	
Fluorene	ND	5	ND	5	ND	5	ND	5	NA	
Indeno(1,2,3-cd)pyrene	ND	5	ND	5	ND	5	ND	5	NA	
2 - Methylnaphthalene	NA		ND	5	ND	5	ND	5	ND	5
Naphthalene	ND	5	ND	5	ND	5	ND	5	ND	5
Phenanthrene	ND	5	ND	5	ND	5	ND	5	NA	
Pyrene	ND	5	ND	5	ND	5	ND	5	NA	
METALS										
Sample ID	TPW-16		TPW-16		TPW-16		TPW-16		TPW-16	
Sample Depth (ft. b.g.s.)	2.2 - 5.2'		2.2 - 5.2'		2.2 - 5.2'		2.2 - 5.2'		2.2 - 5.2'	
Date Collected	9/4/1996		10/2/1997		4/19/1999		7/25/2001		10/24/2002	
Date Extracted										
Date Analyzed					4/22/1999		4/22/1999			
Analytical Method No.					239.2		239.2			
Collection Method					Bailer		Bailer			
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		NA		ND	3	ND	3	NA	

MDL - Method Detection Limit
ND - Not Detected
NA - Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-17		TPW-17		TPW-17		TPW-17		TPW-17	
Sample Depth (ft. b.g.s.)	2.6 - 5.6'		2.6 - 5.6'		2.6 - 5.6'		2.6 - 5.6'		2.6 - 5.6'	
Date Collected	9/4/1996		10/2/1997		4/19/1999		7/25/2001		10/24/2002	
Date Extracted										
Date Analyzed	9/15/1996		10/10/1997		4/22/1999		7/27/2001		10/29/2002	
Analytical Method No.	8020A		8020A		8020A		8020A		8260	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	ND	1	ND	1	ND	1	ND	1	ND	1
Toluene	ND	1	ND	1	ND	1	ND	1	ND	1
Ethylbenzene	ND	1	ND	1	ND	1	ND	1	ND	1
Total Xylenes	ND	3	ND	3	ND	3	ND	3	ND	3
MTBE	NA		NA		NA		ND	5	ND	4
1,2,4 - Trimethylbenzene	NA		NA		ND	1	ND	1	ND	1
1,3,5 - Trimethylbenzene	NA		NA		ND	1	ND	1	ND	1
POLYNUCLEAR AROMATICS (PNAS)										
Sample ID	TPW-17		TPW-17		TPW-17		TPW-17		TPW-17	
Sample Depth (ft. b.g.s.)	2.6 - 5.6'		2.6 - 5.6'		2.6 - 5.6'		2.6 - 5.6'		2.6 - 5.6'	
Date Collected	9/4/1996		10/2/1997		4/19/1999		7/25/2001		10/24/2002	
Date Extracted										
Date Analyzed	9/15/1996		10/10/1997		4/22/1999		7/27/2001		10/29/2002	
Analytical Method No.	8270		8270		8270		8270		8270	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	ND	5	ND	5	ND	5	ND	16	NA	
Acenaphthylene	ND	5	ND	5	ND	5	ND	16	NA	
Anthracene	ND	5	ND	5	ND	5	ND	16	NA	
Benzo(a)anthracene	ND	5	ND	5	ND	5	ND	16	NA	
Benzo(a)pyrene	ND	5	ND	5	ND	5	ND	16	NA	
Benzo(b)fluoranthene	ND	5	ND	5	ND	5	ND	16	NA	
Benzo(g,h,i)perylene	ND	5	ND	5	ND	5	ND	16	NA	
Benzo(k)fluoranthene	ND	5	ND	5	ND	5	ND	16	NA	
Chrysene	ND	5	ND	5	ND	5	ND	16	NA	
Dibenzo(a,h)anthracene	ND	5	ND	5	ND	5	ND	16	NA	
1,2-Dibromoethane	NA		NA		ND	1	NA		NA	
1,2-Dichloroethane	NA		NA		ND	1	NA		NA	
Fluoranthene	ND	5	ND	5	ND	5	ND	16	NA	
Fluorene	ND	5	ND	5	ND	5	ND	16	NA	
Indeno(1,2,3-cd)pyrene	ND	5	ND	5	ND	5	ND	16	NA	
2 - Methylnaphthalene	NA		ND	5	ND	5	ND	16	ND	5
Naphthalene	ND	5	ND	5	ND	5	ND	16	ND	5
Phenanthrene	ND	5	ND	5	ND	5	ND	16	NA	
Pyrene	ND	5	ND	5	ND	5	ND	16	NA	
METALS										
Sample ID	TPW-17		TPW-17		TPW-17		TPW-17		TPW-17	
Sample Depth (ft. b.g.s.)	2.6 - 5.6'		2.6 - 5.6'		2.6 - 5.6'		2.6 - 5.6'		2.6 - 5.6'	
Date Collected	9/4/1996		10/2/1997		4/19/1999		7/25/2001		10/24/2002	
Date Extracted										
Date Analyzed					4/22/1999					
Analytical Method No.					239.2					
Collection Method					Bailer					
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		NA		ND	3	NA		NA	

MDL - Method Detection Limit
ND - Not Detected
NA - Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-18		TPW-18		TPW-18		TPW-18		TPW-18	
Sample Depth (ft. b.g.s.)	3 - 6'		3 - 6'		3 - 6'		3 - 6'		3 - 6'	
Date Collected	9/4/1996		10/2/1997		4/19/1999		7/25/2001		10/24/2002	
Date Extracted										
Date Analyzed	9/15/1996		10/10/1997		4/22/1999		7/27/2001		10/29/2002	
Analytical Method No.	8020A		8020A		8020		8260		8260	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	ND	1	ND	1	ND	1	ND	1	ND	1
Toluene	ND	1	ND	1	ND	1	ND	1	ND	1
Ethylbenzene	ND	1	ND	1	ND	1	ND	1	ND	1
Total Xylenes	ND	3	ND	3	ND	3	ND	3	ND	3
MTBE	NA		NA		NA		ND	5	ND	4
1,2,4 - Trimethylbenzene	NA		NA		ND	1	ND	1	ND	1
1,3,5 - Trimethylbenzene	NA		NA		ND	1	ND	1	ND	1
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	TPW-18		TPW-18		TPW-18		TPW-18		TPW-18	
Sample Depth (ft. b.g.s.)	3 - 6'		3 - 6'		3 - 6'		3 - 6'		3 - 6'	
Date Collected	9/4/1996		10/2/1997		4/19/1999		7/25/2001		10/24/2002	
Date Extracted										
Date Analyzed	9/15/1996		10/10/1997		4/22/1999		7/27/2001		10/29/2002	
Analytical Method No.	8270		8270		8270		8270		8270	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	ND	5	ND	5	ND	5	ND	5	NA	
Acenaphthylene	ND	5	ND	5	ND	5	ND	5	NA	
Anthracene	ND	5	ND	5	ND	5	ND	5	NA	
Benzo(a)anthracene	ND	5	ND	5	ND	5	ND	5	NA	
Benzo(a)pyrene	ND	5	ND	5	ND	5	ND	5	NA	
Benzo(b)fluoranthene	ND	5	ND	5	ND	5	ND	5	NA	
Benzo(g,h,i)perylene	ND	5	ND	5	ND	5	ND	5	NA	
Benzo(k)fluoranthene	ND	5	ND	5	ND	5	ND	5	NA	
Chrysene	ND	5	ND	5	ND	5	ND	5	NA	
Dibenzo(a,h)anthracene	ND	5	ND	5	ND	5	ND	5	NA	
1,2-Dibromoethane	NA		NA		ND	1	NA		NA	
1,2-Dichloroethane	NA		NA		ND	1	NA		NA	
Fluoranthene	ND	5	ND	5	ND	5	ND	5	NA	
Fluorene	ND	5	ND	5	ND	5	ND	5	NA	
Indeno(1,2,3-cd)pyrene	ND	5	ND	5	ND	5	ND	5	NA	
2 - Methylnaphthalene	NA		ND	5	ND	5	ND	5	ND	5
Naphthalene	ND	5	ND	5	ND	5	ND	5	ND	5
Phenanthrene	ND	5	ND	5	ND	5	ND	5	NA	
Pyrene	ND	5	ND	5	ND	5	ND	5	NA	
METALS										
Sample ID	TPW-18		TPW-18		TPW-18		TPW-18		TPW-18	
Sample Depth (ft. b.g.s.)	3 - 6'		3 - 6'		3 - 6'		3 - 6'		3 - 6'	
Date Collected	9/4/1996		10/2/1997		4/19/1999		7/25/2001		10/24/2002	
Date Extracted										
Date Analyzed					4/22/1999					
Analytical Method No.					239.2					
Collection Method					Bailer					
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		NA		ND	3	NA		NA	

MDL - Method Detection Limit
ND - Not Detected
NA - Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-19		TPW-19		TPW-19		TPW-19		TPW-20	
Sample Depth (ft. b.g.s.)	20 - 25'		20 - 25'		20 - 25'		20 - 25'		0 - 5'	
Date Collected	4/19/1999		5/5/1999		7/25/2001		10/24/2002		4/19/1999	
Date Extracted										
Date Analyzed	4/22/1999		5/10/1999		7/27/2001		10/29/2002		4/26/1999	
Analytical Method No.	8020		8020		8260		8260		8020	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	ND	1	ND	1	ND	1	ND	1	15.5	1
Toluene	1.1	1	ND	1	ND	1	ND	1	ND	1
Ethylbenzene	ND	1	ND	1	ND	1	ND	1	ND	1
Total Xylenes	ND	3	ND	3	ND	3	ND	3	ND	3
MTBE	NA		NA		ND	5	ND	4	NA	
1,2,4 - Trimethylbenzene	ND	1	ND	1	ND	1	ND	1	ND	1
1,3,5 - Trimethylbenzene	ND	1	ND	1	ND	1	ND	1	ND	1
POLYNUCLEAR AROMATICS (PNA's)										
Sample ID	TPW-19		TPW-19		TPW-19		TPW-19		TPW-20	
Sample Depth (ft. b.g.s.)	20 - 25'		20 - 25'		20 - 25'		20 - 25'		0 - 5'	
Date Collected	4/19/1999		5/5/1999		7/25/2001		10/24/2002		4/19/1999	
Date Extracted										
Date Analyzed	4/22/1999		5/10/1999		7/27/2001		10/29/2002		4/26/1999	
Analytical Method No.	8270		8270		8270		8270		8270	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	NA		ND	5	NA		NA		7.5	5
Acenaphthylene	NA		ND	5	NA		NA		ND	5
Anthracene	NA		ND	5	NA		NA		ND	5
Benzo(a)anthracene	NA		ND	5	NA		NA		ND	5
Benzo(a)pyrene	NA		ND	5	NA		NA		ND	5
Benzo(b)fluoranthene	NA		ND	5	NA		NA		ND	5
Benzo(g,h,i)perylene	NA		ND	5	NA		NA		ND	5
Benzo(k)fluoranthene	NA		ND	5	NA		NA		ND	5
Chrysene	NA		ND	5	NA		NA		ND	5
Dibenzo(a,h)anthracene	NA		ND	5	NA		NA		ND	5
1,2-Dibromoethane	ND	1	ND	1	NA		NA		ND	1
1,2-Dichloroethane	ND	1	ND	1	NA		NA		ND	1
Fluoranthene	NA		ND	5	NA		NA		8.3	5
Fluorene	NA		ND	5	NA		NA		ND	5
Indeno(1,2,3-cd)pyrene	NA		ND	5	NA		NA		ND	5
2 - Methylnaphthalene	NA		ND	5	ND	5	ND	5	8.4	5
Naphthalene	NA		ND	5	ND	5	ND	5	ND	5
Phenanthrene	NA		ND	5	NA		NA		ND	5
Pyrene	NA		ND	5	NA		NA		ND	5
METALS										
Sample ID	TPW-19		TPW-19		TPW-19		TPW-19		TPW-20	
Sample Depth (ft. b.g.s.)	20 - 25'		20 - 25'		20 - 25'		20 - 25'		0 - 5'	
Date Collected	4/19/1999		5/5/1999		7/25/2001		10/24/2002		4/19/1999	
Date Extracted										
Date Analyzed			5/13/1999						4/22/1999	
Analytical Method No.			7421						239.2	
Collection Method			Bailer						Bailer	
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		ND	3	NA		NA		ND	3

MDL - Method Detection Limit
ND - Not Detected
NA - Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-20		TPW-20		TPW-21		TPW-21		TPW-22	
Sample Depth (ft. b.g.s.)	0 - 5'		0 - 5'		0.5 - 4'		0.5 - 4'		0.5 - 4'	
Date Collected	7/25/2001		10/24/2002		4/19/1999		4/17/2003		4/19/1999	
Date Extracted										
Date Analyzed	7/27/2001		10/29/2002		4/26/1999		4/22/2003		4/22/1999	
Analytical Method No.	8260		8260		8020		8260B		8020	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	ND	1	ND	1	ND	1	ND	1	ND	1
Toluene	ND	1	ND	1	ND	1	ND	1	ND	1
Ethylbenzene	ND	1	ND	1	ND	1	ND	1	ND	1
Total Xylenes	ND	3	ND	3	ND	3	ND	2	ND	3
MTBE	ND	5	ND	4	NA		ND	4	NA	
1,2,4 - Trimethylbenzene	ND	1	ND	1	ND	1	ND	1	ND	1
1,3,5 - Trimethylbenzene	ND	1	ND	1	ND	1	ND	1	ND	1
POLYNUCLEAR AROMATICS (PNAS)										
Sample ID	TPW-20		TPW-20		TPW-21		TPW-21		TPW-22	
Sample Depth (ft. b.g.s.)	0 - 5'		0 - 5'		0.5 - 4'		0.5 - 4'		0.5 - 4'	
Date Collected	7/25/2001		10/24/2002		4/19/1999		4/17/2003		4/19/1999	
Date Extracted										
Date Analyzed	7/27/2001		10/29/2002		4/26/1999		4/26/2003		4/22/1999	
Analytical Method No.	8270		8270		8270		8270C		8270	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	ND	6.6	ND	5	ND	5	ND	5	ND	5
Acenaphthylene	ND	6.6	ND	5	ND	5	ND	5	ND	5
Anthracene	ND	6.6	ND	5	ND	5	ND	5	ND	5
Benzo(a)anthracene	ND	6.6	ND	5	ND	5	ND	5	ND	5
Benzo(a)pyrene	ND	6.6	ND	5	ND	5	ND	5	ND	5
Benzo(b)fluoranthene	ND	6.6	ND	5	ND	5	ND	5	ND	5
Benzo(g,h,i)perylene	ND	6.6	ND	5	ND	5	ND	5	ND	5
Benzo(k)fluoranthene	ND	6.6	ND	5	ND	5	ND	5	ND	5
Chrysene	ND	6.6	ND	5	ND	5	ND	5	ND	5
Dibenzo(a,h)anthracene	ND	6.6	ND	5	ND	5	ND	5	ND	5
1,2-Dibromoethane	NA		NA		ND	1	NA		ND	1
1,2-Dichloroethane	NA		NA		ND	1	NA		ND	1
Fluoranthene	ND	6.6	ND	5	ND	5	ND	5	ND	5
Fluorene	ND	6.6	ND	5	ND	5	ND	5	ND	5
Indeno(1,2,3-cd)pyrene	ND	6.6	ND	5	ND	5	ND	5	ND	5
2 - Methylnaphthalene	ND	6.6	ND	5	ND	5	ND	5	ND	5
Naphthalene	ND	6.6	ND	5	ND	5	ND	5	ND	5
Phenanthrene	ND	6.6	ND	5	ND	5	ND	5	ND	5
Pyrene	ND	6.6	ND	5	ND	5	ND	5	ND	5
METALS										
Sample ID	TPW-20		TPW-20		TPW-21		TPW-21		TPW-22	
Sample Depth (ft. b.g.s.)	0 - 5'		0 - 5'		0.5 - 4'		0.5 - 4'		0.5 - 4'	
Date Collected	7/25/2001		10/24/2002		4/19/1999		4/17/2003		4/19/1999	
Date Extracted										
Date Analyzed					4/22/1999				4/22/1999	
Analytical Method No.					239.2				239.2	
Collection Method					Bailer				Bailer	
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		NA		ND	3	NA		ND	3

MDL - Method Detection Limit
ND - Not Detected
NA - Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-23		TPW-23		TPW-24		TPW-24		TPW-25	
Sample Depth (ft. b.g.s.)	1 - 6'		1 - 6'		0.2 - 4.5'		0.2 - 4.5'		0 - 5'	
Date Collected	7/25/2001		10/24/2002		7/25/2001		10/24/2002		7/25/2001	
Date Extracted										
Date Analyzed	7/27/2001		10/30/2002		7/27/2001		10/30/2002		7/27/2001	
Analytical Method No.	8260		8260		8260		8260		8260	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	150	5	86	1	ND	1	ND	1	7.1	1
Toluene	5.4	5	1	1	ND	1	ND	1	ND	1
Ethylbenzene	66	5	59	1	ND	1	ND	1	5.4	1
Total Xylenes	196.9	15	144.4	3	ND	3	ND	3	ND	3
MTBE	ND	25	5.6	4	ND	5	ND	4	ND	5
1,2,4 - Trimethylbenzene	240	5	140	1	ND	1	ND	1	ND	1
1,3,5 - Trimethylbenzene	71	5	47	1	ND	1	ND	1	ND	1
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	TPW-23		TPW-23		TPW-24		TPW-24		TPW-25	
Sample Depth (ft. b.g.s.)	1 - 6'		1 - 6'		0.2 - 4.5'		0.2 - 4.5'		0 - 5'	
Date Collected	7/25/2001		10/24/2002		7/25/2001		10/24/2002		7/25/2001	
Date Extracted										
Date Analyzed	7/27/2001		10/30/2002		7/27/2001		10/30/2002		7/27/2001	
Analytical Method No.	8270		8270		8270		8270		8270	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	ND	5	36	5	ND	5	NA		NA	
Acenaphthylene	ND	5	5.9	5	ND	5	NA		NA	
Anthracene	ND	5	16	5	ND	5	NA		NA	
Benzo(a)anthracene	ND	5	ND	5	ND	5	NA		NA	
Benzo(a)pyrene	ND	5	ND	5	ND	5	NA		NA	
Benzo(b)fluoranthene	ND	5	ND	5	ND	5	NA		NA	
Benzo(g,h,i)perylene	ND	5	ND	5	ND	5	NA		NA	
Benzo(k)fluoranthene	ND	5	ND	5	ND	5	NA		NA	
Chrysene	ND	5	ND	5	ND	5	NA		NA	
Dibenzo(a,h)anthracene	ND	5	ND	5	ND	5	NA		NA	
1,2-Dibromoethane	NA		NA		NA		NA		NA	
1,2-Dichloroethane	NA		NA		NA		NA		NA	
Fluoranthene	ND	5	ND	5	ND	5	NA		NA	
Fluorene	ND	5	20	5	ND	5	NA		NA	
Indeno(1,2,3-cd)pyrene	ND	5	ND	5	ND	5	NA		NA	
2 - Methylnaphthalene	420	25	290	5	ND	5	ND	5	31	5
Naphthalene	ND	5	84	5	ND	5	ND	5	18	5
Phenanthrene	ND	5	59	5	ND	5	NA		NA	
Pyrene	ND	5	ND	5	ND	5	NA		NA	
METALS										
Sample ID	TPW-23		TPW-23		TPW-24		TPW-24		TPW-25	
Sample Depth (ft. b.g.s.)	1 - 6'		1 - 6'		0.2 - 4.5'		0.2 - 4.5'		0 - 5'	
Date Collected	7/25/2001		10/24/2002		7/25/2001		10/24/2002		7/25/2001	
Date Extracted										
Date Analyzed	7/31/2001				7/31/2001					
Analytical Method No.	7421				7421					
Collection Method	Bailer				Bailer					
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	ND	3	NA		ND	3	NA		NA	

MDL - Method Detection Limit
ND - Not Detected
NA - Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-25		TPW-26		TPW-26		TPW-27		TPW-28	
Sample Depth (ft. b.g.s.)	0 - 5'		0 - 5'		0 - 5'		23 - 28'		0 - 5'	
Date Collected	10/24/2002		7/25/2001		10/24/2002		10/24/2002		10/24/2002	
Date Extracted										
Date Analyzed	10/29/2002		7/27/2001		10/30/2002		10/29/2002		10/29/2002	
Analytical Method No.	8260		8260		8260		8260		8260	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	ND	1	ND	1	ND	1	ND	1	150	10
Toluene	ND	1	ND	1	ND	1	ND	1	10	10
Ethylbenzene	ND	1	6.2	1	ND	1	ND	1	1300	10
Total Xylenes	ND	3	ND	3	ND	3	ND	3	232	30
MTBE	ND	4	ND	5	ND	4	ND	4	ND	40
1,2,4 - Trimethylbenzene	ND	1	55	1	ND	1	ND	1	400	10
1,3,5 - Trimethylbenzene	ND	1	15	1	ND	1	ND	1	170	10
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	TPW-25		TPW-26		TPW-26		TPW-27		TPW-28	
Sample Depth (ft. b.g.s.)	0 - 5'		0 - 5'		0 - 5'		23 - 28'		0 - 5'	
Date Collected	10/24/2002		7/25/2001		10/24/2002		10/24/2002		10/24/2002	
Date Extracted										
Date Analyzed	10/29/2002		7/27/2001		10/30/2002		10/29/2002		10/29/2002	
Analytical Method No.	8270		8270		8270		8270		8270	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	ND	5	ND	6.5	ND	5	ND	5	ND	5
Acenaphthylene	ND	5	ND	6.5	ND	5	ND	5	ND	5
Anthracene	ND	5	ND	6.5	ND	5	ND	5	ND	5
Benzo(a)anthracene	ND	5	ND	6.5	ND	5	ND	5	ND	5
Benzo(a)pyrene	ND	5	ND	6.5	ND	5	ND	5	ND	5
Benzo(b)fluoranthene	ND	5	ND	6.5	ND	5	ND	5	ND	5
Benzo(g,h,i)perylene	ND	5	ND	6.5	ND	5	ND	5	ND	5
Benzo(k)fluoranthene	ND	5	ND	6.5	ND	5	ND	5	ND	5
Chrysene	ND	5	ND	6.5	ND	5	ND	5	ND	5
Dibenzo(a,h)anthracene	ND	5	ND	6.5	ND	5	ND	5	ND	5
1,2-Dibromoethane	NA		NA		NA		NA		NA	
1,2-Dichloroethane	NA		NA		NA		NA		NA	
Fluoranthene	ND	5	ND	6.5	ND	5	ND	5	5.2	5
Fluorene	ND	5	ND	6.5	ND	5	ND	5	15	5
Indeno(1,2,3-cd)pyrene	ND	5	ND	6.5	ND	5	ND	5	ND	5
2 - Methylnaphthalene	ND	5	210	5	ND	5	ND	5	390	5
Naphthalene	ND	5	ND	6.5	ND	5	ND	5	470	5
Phenanthrene	ND	5	ND	6.5	ND	5	ND	5	14	5
Pyrene	ND	5	ND	6.5	ND	5	ND	5	ND	5
METALS										
Sample ID	TPW-25		TPW-26		TPW-26		TPW-27		TPW-28	
Sample Depth (ft. b.g.s.)	0 - 5'		0 - 5'		0 - 5'		23 - 28'		0 - 5'	
Date Collected	10/24/2002		7/25/2001		10/24/2002		10/24/2002		10/24/2002	
Date Extracted										
Date Analyzed			7/31/2001				10/31/2002		10/31/2002	
Analytical Method No.			7421				7421		7421	
Collection Method			Bailer				Bailer		Bailer	
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		ND	3	NA		ND	3	14	3

MDL - Method Detection Limit
ND - Not Detected
NA - Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-29		TPW-30		TPW-31		TPW-32		TPW-33	
Sample Depth (ft. b.g.s.)	0 - 4'		0 - 5'		0 - 5'		3 - 8'		0.5 - 5.5'	
Date Collected	10/24/2002		10/24/2002		10/24/2002		10/24/2002		4/17/2003	
Date Extracted										
Date Analyzed	10/29/2002		10/29/2002		10/29/2002		10/29/2002		4/22/2003	
Analytical Method No.	8260		8260		8260		8260		8260B	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	ND	1	160	100	5000	50	2900	50	ND	1
Toluene	ND	1	120	100	320	50	71	50	ND	1
Ethylbenzene	ND	1	4600	100	2200	50	1500	50	ND	1
Total Xylenes	ND	3	15300	300	7500	150	4920	150	ND	2
MTBE	ND	4	ND	400	ND	200	ND	200	ND	4
1,2,4 - Trimethylbenzene	ND	1	5,700	100	4,500	50	1,500	50	ND	1
1,3,5 - Trimethylbenzene	ND	1	1,900	100	1,200	50	440	50	ND	1
POLYNUCLEAR AROMATICS (PNA)										
Sample ID	TPW-29		TPW-30		TPW-31		TPW-32		TPW-33	
Sample Depth (ft. b.g.s.)	0 - 4'		0 - 5'		0 - 5'		3 - 8'		0.5 - 5.5'	
Date Collected	10/24/2002		10/24/2002		10/24/2002		10/24/2002		4/17/2003	
Date Extracted										
Date Analyzed	10/29/2002		10/29/2002		10/29/2002		10/29/2002		4/28/2003	
Analytical Method No.	8270		8270		8270		8270		8270C	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	ND	5	84	50	72	55	ND	5	ND	5
Acenaphthylene	ND	5	ND	50	ND	55	ND	5	ND	5
Anthracene	ND	5	84	50	ND	55	ND	5	ND	5
Benzo(a)anthracene	ND	5	ND	50	ND	55	ND	5	ND	5
Benzo(a)pyrene	ND	5	ND	50	ND	55	ND	5	ND	5
Benzo(b)fluoranthene	ND	5	ND	50	ND	55	ND	5	ND	5
Benzo(g,h,i)perylene	ND	5	ND	50	ND	55	ND	5	ND	5
Benzo(k)fluoranthene	ND	5	ND	50	ND	55	ND	5	ND	5
Chrysene	ND	5	ND	50	ND	55	ND	5	ND	5
Dibenzo(a,h)anthracene	ND	5	ND	50	ND	55	ND	5	ND	5
1,2-Dibromoethane	NA		NA		NA		NA		NA	
1,2-Dichloroethane	NA		NA		NA		NA		NA	
Fluoranthene	ND	5	ND	50	ND	55	ND	5	ND	5
Fluorene	ND	5	140	50	130	55	23	5	ND	5
Indeno(1,2,3-cd)pyrene	ND	5	ND	50	ND	55	ND	5	ND	5
2 - Methylnaphthalene	ND	5	1600	500	1500	250	620	250	ND	5
Naphthalene	ND	5	1200	50	1000	55	350	5	ND	5
Phenanthrene	ND	5	290	50	130	55	23	5	ND	5
Pyrene	ND	5	ND	50	ND	55	ND	5	ND	5
METALS										
Sample ID	TPW-29		TPW-30		TPW-31		TPW-32		TPW-33	
Sample Depth (ft. b.g.s.)	0 - 4'		0 - 5'		0 - 5'		3 - 8'		0.5 - 5.5'	
Date Collected	10/24/2002		10/24/2002		10/24/2002		10/24/2002		4/17/2003	
Date Extracted										
Date Analyzed	10/31/2002		10/31/2002							
Analytical Method No.	7421		7421							
Collection Method	Bailer		Bailer							
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	ND	3	12	3	NA		NA		NA	

MDL - Method Detection Limit
ND - Not Detected
NA - Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	TPW-34		SW-13		SW-13		SW-13		SW-13	
Sample Depth (ft. b.g.s.)	0.5 - 5'		3 - 8'		3 - 8'		3 - 8'		3 - 8'	
Date Collected	4/17/2003		?/?/1988		?/?/1989		3/25/1994		6/?/94	
Date Extracted										
Date Analyzed	4/23/2003		??		??		??		??	
Analytical Method No.	8260B		602		602		602		602	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	ND	1	970	?	1600	?	780	?	1900	?
Toluene	ND	1	42	?	20	?	ND	?	ND	?
Ethylbenzene	ND	1	170	?	160	?	79	?	ND	?
Total Xylenes	ND	2	1000	?	520	?	460	?	360	?
MTBE	ND	4	NA		NA		NA		NA	
1,2,4 - Trimethylbenzene	ND	1	NA		NA		NA		NA	
1,3,5 - Trimethylbenzene	ND	1	NA		NA		NA		NA	
POLYNUCLEAR AROMATIC S (PNA's)										
Sample ID	TPW-34		SW-13		SW-13		SW-13		SW-13	
Sample Depth (ft. b.g.s.)	0.5 - 5'		3 - 8'		3 - 8'		3 - 8'		3 - 8'	
Date Collected	4/17/2003		?/?/1988		?/?/1989		3/25/1994		6/?/94	
Date Extracted										
Date Analyzed	4/29/2003									
Analytical Method No.	8270C									
Collection Method	Bailer									
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	ND	5	NA		NA		NA		NA	
Acenaphthylene	ND	5	NA		NA		NA		NA	
Anthracene	ND	5	NA		NA		NA		NA	
Benzo(a)anthracene	ND	5	NA		NA		NA		NA	
Benzo(a)pyrene	ND	5	NA		NA		NA		NA	
Benzo(b)fluoranthene	ND	5	NA		NA		NA		NA	
Benzo(g,h,i)perylene	ND	5	NA		NA		NA		NA	
Benzo(k)fluoranthene	ND	5	NA		NA		NA		NA	
Chrysene	ND	5	NA		NA		NA		NA	
Dibenzo(a,h)anthracene	ND	5	NA		NA		NA		NA	
1,2-Dibromoethane	NA		NA		NA		NA		NA	
1,2-Dichloroethane	NA		NA		NA		NA		NA	
Fluoranthene	ND	5	NA		NA		NA		NA	
Fluorene	ND	5	NA		NA		NA		NA	
Indeno(1,2,3-cd)pyrene	ND	5	NA		NA		NA		NA	
2 - Methylnaphthalene	ND	5	NA		NA		NA		NA	
Naphthalene	ND	5	NA		NA		NA		NA	
Phenanthrene	ND	5	NA		NA		NA		NA	
Pyrene	ND	5	NA		NA		NA		NA	
METALS										
Sample ID	TPW-34		SW-13		SW-13		SW-13		SW-13	
Sample Depth (ft. b.g.s.)	0.5 - 5'		3 - 8'		3 - 8'		3 - 8'		3 - 8'	
Date Collected	4/17/2003		?/?/1988		?/?/1989		3/25/1994		6/?/94	
Date Extracted										
Date Analyzed										
Analytical Method No.										
Collection Method										
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		NA		NA		NA		NA	

MDL - Method Detection Limit
ND - Not Detected
NA - Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	SW-13		SW-13		SW-13		SW-13		SW-13	
Sample Depth (ft. b.g.s.)	3 - 8'		3 - 8'		3 - 8'		3 - 8'		3 - 8'	
Date Collected	9/?/94		4/16/1996		9/4/1996		10/2/1997		4/19/1999	
Date Extracted										
Date Analyzed	??		4/26/1996		9/16/1996		10/14/1997		4/26/1999	
Analytical Method No.	602		602		8020A		8020A		8020	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	2200	?	3900	100	1700	5	1700	10	1420	10
Toluene	ND	?	ND	20	190	5	27	10	17.4	10
Ethylbenzene	ND	?	ND	20	320	5	100	10	126	10
Total Xylenes	240	?	240	60	2500	15	610	30	501.7	30
MTBE	NA		NA		NA		NA		NA	
1,2,4 - Trimethylbenzene	NA		NA		NA		NA		217	10
1,3,5 - Trimethylbenzene	NA		NA		NA		NA		81.5	10
POLYNUCLEAR AROMATICS (PNA's)										
Sample ID	SW-13		SW-13		SW-13		SW-13		SW-13	
Sample Depth (ft. b.g.s.)	3 - 8'		3 - 8'		3 - 8'		3 - 8'		3 - 8'	
Date Collected	9/?/94		4/16/1996		9/4/1996		10/2/1997		4/19/1999	
Date Extracted										
Date Analyzed			4/26/1996		9/16/1996		10/14/1997		4/26/1999	
Analytical Method No.			8270		8270		8270		8270	
Collection Method			Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	NA		ND	5	44	5	ND	5	ND	5
Acenaphthylene	NA		ND	5	ND	5	ND	5	ND	5
Anthracene	NA		ND	5	12	5	ND	5	ND	5
Benzo(a)anthracene	NA		ND	5	ND	5	ND	5	ND	5
Benzo(a)pyrene	NA		ND	5	ND	5	ND	5	ND	5
Benzo(b)fluoranthene	NA		ND	5	ND	5	ND	5	ND	5
Benzo(g,h,i)perylene	NA		ND	5	ND	5	ND	5	ND	5
Benzo(k)fluoranthene	NA		ND	5	ND	5	ND	5	ND	5
Chrysene	NA		ND	5	ND	5	ND	5	ND	5
Dibenzo(a,h)anthracene	NA		ND	5	ND	5	ND	5	ND	5
1,2-Dibromoethane	NA		NA		NA		NA		212	10
1,2-Dichloroethane	NA		NA		NA		NA		248	10
Fluoranthene	NA		ND	5	ND	5	ND	5	ND	5
Fluorene	NA		ND	5	40	5	40	5	8.1	5
Indeno(1,2,3-cd)pyrene	NA		ND	5	ND	5	ND	5	ND	5
2 - Methylnaphthalene	NA		NA		NA		270	5	120	5
Naphthalene	NA		ND	5	2300	5	180	5	180	5
Phenanthrene	NA		ND	5	160	5	14	5	12	5
Pyrene	NA		ND	5	ND	5	ND	5	ND	5
METALS										
Sample ID	SW-13		SW-13		SW-13		SW-13		SW-13	
Sample Depth (ft. b.g.s.)	3 - 8'		3 - 8'		3 - 8'		3 - 8'		3 - 8'	
Date Collected	9/?/94		4/16/1996		9/4/1996		10/2/1997		4/19/1999	
Date Extracted										
Date Analyzed			4/23/1996						4/22/1999	
Analytical Method No.			239.2						239.2	
Collection Method			Bailer						Bailer	
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		ND	3	NA		NA		ND	3

MDL - Method Detection Limit
ND - Not Detected
NA - Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	SW-13		SW-27		SW-27		SW-27		SW-27	
Sample Depth (ft. b.g.s.)	3 - 8'		5 - 10'		5 - 10'		5 - 10'		5 - 10'	
Date Collected	10/24/2002		?/?/1988		?/?/1989		3/25/1994		6/?/94	
Date Extracted										
Date Analyzed	10/29/2002		??		??		??		??	
Analytical Method No.	8020		602		602		602		602	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	2600	25	ND	?	3	?	ND	1	ND	?
Toluene	30	25	ND	?	ND	?	ND	1	ND	?
Ethylbenzene	230	25	1	?	ND	?	ND	1	ND	?
Total Xylenes	665	75	ND	?	ND	?	ND	3	ND	?
MTBE	ND	100	NA		NA		NA		NA	
1,2,4 - Trimethylbenzene	300	25	NA		NA		NA		NA	
1,3,5 - Trimethylbenzene	79	25	NA		NA		NA		NA	
POLYNUCLEAR AROMATICS (PNA)										
Sample ID	SW-13		SW-27		SW-27		SW-27		SW-27	
Sample Depth (ft. b.g.s.)	3 - 8'		5 - 10'		5 - 10'		5 - 10'		5 - 10'	
Date Collected	10/24/2002		?/?/1988		?/?/1989		3/25/1994		6/?/94	
Date Extracted										
Date Analyzed	10/29/2002									
Analytical Method No.	8270									
Collection Method	Bailer									
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	8.6	5	NA		NA		NA		NA	
Acenaphthylene	ND	5	NA		NA		NA		NA	
Anthracene	ND	5	NA		NA		NA		NA	
Benzo(a)anthracene	ND	5	NA		NA		NA		NA	
Benzo(a)pyrene	ND	5	NA		NA		NA		NA	
Benzo(b)fluoranthene	ND	5	NA		NA		NA		NA	
Benzo(g,h,i)perylene	ND	5	NA		NA		NA		NA	
Benzo(k)fluoranthene	ND	5	NA		NA		NA		NA	
Chrysene	ND	5	NA		NA		NA		NA	
Dibenzo(a,h)anthracene	ND	5	NA		NA		NA		NA	
1,2-Dibromoethane	NA		NA		NA		NA		NA	
1,2-Dichloroethane	NA		NA		NA		NA		NA	
Fluoranthene	ND	5	NA		NA		NA		NA	
Fluorene	11	5	NA		NA		NA		NA	
Indeno(1,2,3-cd)pyrene	ND	5	NA		NA		NA		NA	
2 - Methylnaphthalene	260	120	NA		NA		NA		NA	
Naphthalene	190	5	NA		NA		NA		NA	
Phenanthrene	8.8	5	NA		NA		NA		NA	
Pyrene	ND	5	NA		NA		NA		NA	
METALS										
Sample ID	SW-13		SW-27		SW-27		SW-27		SW-27	
Sample Depth (ft. b.g.s.)	3 - 8'		5 - 10'		5 - 10'		5 - 10'		5 - 10'	
Date Collected	10/24/2002		?/?/1988		?/?/1989		3/25/1994		6/?/94	
Date Extracted										
Date Analyzed										
Analytical Method No.										
Collection Method										
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		NA		NA		NA		NA	

MDL - Method Detection Limit
ND - Not Detected
NA - Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	SW-27		SW-27		SW-27		SW-27		SW-27	
Sample Depth (ft. b.g.s.)	5 - 10'		5 - 10'		5 - 10'		5 - 10'		5 - 10'	
Date Collected	9/?/94		12/?/94		3/?/95		6/?/95		9/?/95	
Date Extracted										
Date Analyzed	??		??		??		??		??	
Analytical Method No.	602		602		602		602		602	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	ND	?	ND	?	ND	?	ND	?	ND	?
Toluene	ND	?	ND	?	ND	?	ND	?	ND	?
Ethylbenzene	ND	?	ND	?	ND	?	ND	?	ND	?
Total Xylenes	ND	?	ND	?	ND	?	ND	?	ND	?
MTBE	NA		NA		NA		NA		NA	
1,2,4 - Trimethylbenzene	NA		NA		NA		NA		NA	
1,3,5 - Trimethylbenzene	NA		NA		NA		NA		NA	
POLYNUCLEAR AROMATICS/PNAs										
Sample ID	SW-27		SW-27		SW-27		SW-27		SW-27	
Sample Depth (ft. b.g.s.)	5 - 10'		5 - 10'		5 - 10'		5 - 10'		5 - 10'	
Date Collected	9/?/94		12/?/94		3/?/95		6/?/95		9/?/95	
Date Extracted										
Date Analyzed										
Analytical Method No.										
Collection Method										
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	NA		NA		NA		NA		NA	
Acenaphthylene	NA		NA		NA		NA		NA	
Anthracene	NA		NA		NA		NA		NA	
Benzo(a)anthracene	NA		NA		NA		NA		NA	
Benzo(a)pyrene	NA		NA		NA		NA		NA	
Benzo(b)fluoranthene	NA		NA		NA		NA		NA	
Benzo(g,h,i)perylene	NA		NA		NA		NA		NA	
Benzo(k)fluoranthene	NA		NA		NA		NA		NA	
Chrysene	NA		NA		NA		NA		NA	
Dibenzo(a,h)anthracene	NA		NA		NA		NA		NA	
1,2-Dibromoethane	NA		NA		NA		NA		NA	
1,2-Dichloroethane	NA		NA		NA		NA		NA	
Fluoranthene	NA		NA		NA		NA		NA	
Fluorene	NA		NA		NA		NA		NA	
Indeno(1,2,3-cd)pyrene	NA		NA		NA		NA		NA	
2 - Methylnaphthalene	NA		NA		NA		NA		NA	
Naphthalene	NA		NA		NA		NA		NA	
Phenanthrene	NA		NA		NA		NA		NA	
Pyrene	NA		NA		NA		NA		NA	
METALS										
Sample ID	SW-27		SW-27		SW-27		SW-27		SW-27	
Sample Depth (ft. b.g.s.)	5 - 10'		5 - 10'		5 - 10'		5 - 10'		5 - 10'	
Date Collected	9/?/94		12/?/94		3/?/95		6/?/95		9/?/95	
Date Extracted										
Date Analyzed										
Analytical Method No.										
Collection Method										
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		NA		NA		NA		NA	

MDL - Method Detection Limit
ND - Not Detected
NA - Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	SW-27		SW-27		SW-27		SW-27		213	
Sample Depth (ft. b.g.s.)	5 - 10'		5 - 10'		5 - 10'		5 - 10'		80 - 85'	
Date Collected	12/?/95		3/?/96		6/?/96		7/25/2001		?/?/1989	
Date Extracted										
Date Analyzed	??		??		??		7/26/2001		??	
Analytical Method No.	602		602		602		8260		602	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	ND	?	ND	?	ND	?	ND	1	ND	?
Toluene	ND	?	ND	?	ND	?	ND	1	ND	?
Ethylbenzene	ND	?	ND	?	ND	?	ND	1	ND	?
Total Xylenes	ND	?	ND	?	ND	?	ND	3	7	?
MTBE	NA		NA		NA		ND	5	NA	
1,2,4 - Trimethylbenzene	NA		NA		NA		ND	1	NA	
1,3,5 - Trimethylbenzene	NA		NA		NA		ND	1	NA	
POLYNUCLEAR AROMATICS (PNA's)										
Sample ID	SW-27		SW-27		SW-27		SW-27		213	
Sample Depth (ft. b.g.s.)	5 - 10'		5 - 10'		5 - 10'		5 - 10'		80 - 85'	
Date Collected	12/?/95		3/?/96		6/?/96		7/25/2001		?/?/1989	
Date Extracted										
Date Analyzed										
Analytical Method No.										
Collection Method										
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	NA		NA		NA		NA		NA	
Acenaphthylene	NA		NA		NA		NA		NA	
Anthracene	NA		NA		NA		NA		NA	
Benzo(a)anthracene	NA		NA		NA		NA		NA	
Benzo(a)pyrene	NA		NA		NA		NA		NA	
Benzo(b)fluoranthene	NA		NA		NA		NA		NA	
Benzo(g,h,i)perylene	NA		NA		NA		NA		NA	
Benzo(k)fluoranthene	NA		NA		NA		NA		NA	
Chrysene	NA		NA		NA		NA		NA	
Dibenzo(a,h)anthracene	NA		NA		NA		NA		NA	
1,2-Dibromoethane	NA		NA		NA		NA		NA	
1,2-Dichloroethane	NA		NA		NA		NA		NA	
Fluoranthene	NA		NA		NA		NA		NA	
Fluorene	NA		NA		NA		NA		NA	
Indeno(1,2,3-cd)pyrene	NA		NA		NA		NA		NA	
2 - Methylnaphthalene	NA		NA		NA		ND	5	NA	
Naphthalene	NA		NA		NA		ND	5	NA	
Phenanthrene	NA		NA		NA		NA		NA	
Pyrene	NA		NA		NA		NA		NA	
METALS										
Sample ID	SW-27		SW-27		SW-27		SW-27		213	
Sample Depth (ft. b.g.s.)	5 - 10'		5 - 10'		5 - 10'		5 - 10'		80 - 85'	
Date Collected	12/?/95		3/?/96		6/?/96		7/25/2001		?/?/1989	
Date Extracted										
Date Analyzed										
Analytical Method No.										
Collection Method										
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		NA		NA		NA		NA	

MDL - Method Detection Limit
ND - Not Detected
NA - Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	213		213		213		213		213	
Sample Depth (ft. b.g.s.)	80 - 85'		80 - 85'		80 - 85'		80 - 85'		80 - 85'	
Date Collected	3/23/1994		6/?/94		9/?/94		12/?/94		3/?/95	
Date Extracted										
Date Analyzed	??		??		??		??		??	
Analytical Method No.	602		602		602		602		602	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	ND	?	ND	?	ND	?	ND	?	ND	?
Toluene	ND	?	ND	?	ND	?	ND	?	ND	?
Ethylbenzene	ND	?	ND	?	ND	?	ND	?	ND	?
Total Xylenes	ND	?	ND	?	ND	?	ND	?	ND	?
MTBE	NA		NA		NA		NA		NA	
1,2,4 - Trimethylbenzene	NA		NA		NA		NA		NA	
1,3,5 - Trimethylbenzene	NA		NA		NA		NA		NA	
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	213		213		213		213		213	
Sample Depth (ft. b.g.s.)	80 - 85'		80 - 85'		80 - 85'		80 - 85'		80 - 85'	
Date Collected	3/23/1994		6/?/94		9/?/94		12/?/94		3/?/95	
Date Extracted										
Date Analyzed										
Analytical Method No.										
Collection Method										
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	NA		NA		NA		NA		NA	
[illegible]naphthylene	NA		NA		NA		NA		NA	
[illegible]acene	NA		NA		NA		NA		NA	
Benzo(a)anthracene	NA		NA		NA		NA		NA	
Benzo(a)pyrene	NA		NA		NA		NA		NA	
Benzo(b)fluoranthene	NA		NA		NA		NA		NA	
Benzo(g,h,i)perylene	NA		NA		NA		NA		NA	
Benzo(k)fluoranthene	NA		NA		NA		NA		NA	
Chrysene	NA		NA		NA		NA		NA	
Dibenzo(a,h)anthracene	NA		NA		NA		NA		NA	
1,2-Dibromoethane	NA		NA		NA		NA		NA	
1,2-Dichloroethane	NA		NA		NA		NA		NA	
Fluoranthene	NA		NA		NA		NA		NA	
Fluorene	NA		NA		NA		NA		NA	
Indeno(1,2,3-cd)pyrene	NA		NA		NA		NA		NA	
2 - Methylnaphthalene	NA		NA		NA		NA		NA	
Naphthalene	NA		NA		NA		NA		NA	
Phenanthrene	NA		NA		NA		NA		NA	
Pyrene	NA		NA		NA		NA		NA	
METALS										
Sample ID	213		213		213		213		213	
Sample Depth (ft. b.g.s.)	80 - 85'		80 - 85'		80 - 85'		80 - 85'		80 - 85'	
Date Collected	3/23/1994		6/?/94		9/?/94		12/?/94		3/?/95	
Date Extracted										
Date Analyzed										
Analytical Method No.										
Collection Method										
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		NA		NA		NA		NA	

MDL - Method Detection Limit
ND - Not Detected
NA - Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

ILES										
ample ID	213		213		213		213		213	
ample Depth (ft. b.g.s.)	80 - 85'		80 - 85'		80 - 85'		80 - 85'		80 - 85'	
ate Collected	6/?/95		9/?/95		12/?/95		3/?/96		6/?/96	
ate Extracted										
ate Analyzed	??		??		??		??		??	
nalytical Method No.	602		602		602		602		602	
ollection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
ONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	ND	?	ND	?	ND	?	ND	?	ND	?
Toluene	ND	?	ND	?	ND	?	ND	?	ND	?
Ethylbenzene	ND	?	ND	?	ND	?	ND	?	ND	?
Total Xylenes	ND	?	ND	?	ND	?	ND	?	ND	?
MTBE	NA		NA		NA		NA		NA	
1,2,4 - Trimethylbenzene	NA		NA		NA		NA		NA	
1,3,5 - Trimethylbenzene	NA		NA		NA		NA		NA	
OLYNUCLEAR AROMATICS (PNAs)										
ample ID	213		213		213		213		213	
ample Depth (ft. b.g.s.)	80 - 85'		80 - 85'		80 - 85'		80 - 85'		80 - 85'	
ate Collected	6/?/95		9/?/95		12/?/95		3/?/96		6/?/96	
ate Extracted										
ate Analyzed										
nalytical Method No.										
ollection Method										
ONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	NA		NA		NA		NA		NA	
Ac...aphthylene	NA		NA		NA		NA		NA	
...ene	NA		NA		NA		NA		NA	
Benzo(a)anthracene	NA		NA		NA		NA		NA	
Benzo(a)pyrene	NA		NA		NA		NA		NA	
Benzo(b)fluoranthene	NA		NA		NA		NA		NA	
Benzo(g,h,i)perylene	NA		NA		NA		NA		NA	
Benzo(k)fluoranthene	NA		NA		NA		NA		NA	
Chrysene	NA		NA		NA		NA		NA	
Dibenzo(a,h)anthracene	NA		NA		NA		NA		NA	
1,2-Dibromoethane	NA		NA		NA		NA		NA	
1,2-Dichloroethane	NA		NA		NA		NA		NA	
Fluoranthene	NA		NA		NA		NA		NA	
Fluorene	NA		NA		NA		NA		NA	
ndeno(1,2,3-cd)pyrene	NA		NA		NA		NA		NA	
2 - Methylnaphthalene	NA		NA		NA		NA		NA	
Naphthalene	NA		NA		NA		NA		NA	
Phenanthrene	NA		NA		NA		NA		NA	
Pyrene	NA		NA		NA		NA		NA	
mple ID	213		213		213		213		213	
mple Depth (ft. b.g.s.)	80 - 85'		80 - 85'		80 - 85'		80 - 85'		80 - 85'	
te Collected	6/?/95		9/?/95		12/?/95		3/?/96		6/?/96	
te Extracted										
te Analyzed										
alytical Method No.										
llection Method										
)NSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	NA		NA		NA		NA		NA	

)L - Method Detection Limit
) - Not Detected
\ - Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

ATILES										
Sample ID	223		223		223		SB-1		SB-2	
Sample Depth (ft. b.g.s.)	12 - 17'		12 - 17'		12 - 17'		Water Table		Water Table	
Date Collected	?/?/1989		3/24/1996		4/16/1996		5/5/1999		5/5/1999	
Date Extracted										
Date Analyzed	??		??		4/26/1996		5/10/1999		5/10/1999	
Analytical Method No.	602		602		602		8021		8021	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
Benzene	ND	?	ND	1	ND	5	ND	1	ND	1
Toluene	ND	?	ND	1	ND	1	ND	1	ND	1
Ethylbenzene	ND	?	ND	1	ND	1	ND	1	ND	1
Total Xylenes	6	?	ND	3	ND	3	ND	3	ND	3
MTBE	NA		NA		NA		NA		NA	
1,2,4 - Trimethylbenzene	NA		NA		NA		ND	1	ND	1
1,3,5 - Trimethylbenzene	NA		NA		NA		ND	1	ND	1
OCYNUCLEAR AROMATICS (PNAs)										
ample ID	223		223		223		SB-1		SB-2	
ample Depth (ft. b.g.s.)	12 - 17'		12 - 17'		12 - 17'		Water Table		Water Table	
ate Collected	?/?/1989		3/24/1996		4/16/1996		5/5/1999		5/5/1999	
ate Extracted										
ate Analyzed					4/26/1996		5/10/1999		5/10/1999	
nalytical Method No.					625		8270		8270	
ollection Method					Bailer		Bailer		Bailer	
ONSTITUENT (ug/L)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
Acenapthene	NA		NA		ND	5	ND	5	ND	5
Acenaphthylene	NA		NA		ND	5	ND	5	ND	5
cene	NA		NA		ND	5	ND	5	ND	5
(a)anthracene	NA		NA		ND	5	ND	5	ND	5
Benzo(a)pyrene	NA		NA		ND	5	ND	5	ND	5
Benzo(b)fluoranthene	NA		NA		ND	5	ND	5	ND	5
Benzo(g,h,i)perylene	NA		NA		ND	5	ND	5	ND	5
Benzo(k)fluoranthene	NA		NA		ND	5	ND	5	ND	5
Chrysene	NA		NA		ND	5	ND	5	ND	5
Dibenzo(a,h)anthracene	NA		NA		ND	5	ND	5	ND	5
1,2-Dibromoethane	NA		NA		NA		ND	1	ND	1
1,2-Dichloroethane	NA		NA		NA		ND	1	ND	1
Fluoranthene	NA		NA		ND	5	ND	5	ND	5
Fluorene	NA		NA		ND	5	ND	5	ND	5
ndeno(1,2,3-cd)pyrene	NA		NA		ND	5	ND	5	ND	5
2 - Methylnaphthalene	NA		NA		NA		ND	5	ND	5
Naphthalene	NA		NA		ND	5	ND	5	ND	5
Phenanthrene	NA		NA		ND	5	ND	5	ND	5
Pyrene	NA		NA		ND	5	ND	5	ND	5
mple ID	223		223		223		SB-1		SB-2	
mple Depth (ft. b.g.s.)	12 - 17'		12 - 17'		12 - 17'		Water Table		Water Table	
te Collected	?/?/1989		3/24/1996		4/16/1996		5/5/1999		5/5/1999	
te Extracted										
te Analyzed					4/23/1996					
alytical Method No.					239.2					
lection Method					Bailer					
NSTITUENT(ug/L)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
otal Lead	NA		NA		ND	3	NA		NA	

IL - Method Detection Limit
- Not Detected
- Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES										
Sample ID	SB-3		SB-4		SB-9		SB-10		SB-11	
Sample Depth (ft. b.g.s.)	Water Table		Water Table		Water Table		Water Table		Water Table	
Date Collected	5/5/1999		5/5/1999		8/5/1999		8/5/1999		8/5/1999	
Date Extracted										
Date Analyzed	5/10/1999		5/11/1999		8/11/1999		8/11/1999		8/11/1999	
Analytical Method No.	8260		8260		8260		8260		8260	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Benzene	1500	10	2900	10	360	10	640	5	1800	10
Toluene	8.1	1	37	10	ND	1	8.5	1	4.5	1
Ethylbenzene	1800	10	1700	10	74	1	110	1	550	10
Total Xylenes	3651	21	4856	30	33	3	124.5	3	384.2	3
MTBE	NA		NA		NA		NA		NA	
1,2,4 - Trimethylbenzene	200	1	1,000	10	150	1	46	1	330	10
1,3,5 - Trimethylbenzene	310	1	240	10	38	1	15	1	55	1
POLYNUCLEAR AROMATICS (PNA)										
Sample ID	SB-3		SB-4		SB-9		SB-10		SB-11	
Sample Depth (ft. b.g.s.)	Water Table		Water Table		Water Table		Water Table		Water Table	
Date Collected	5/5/1999		5/5/1999		8/5/1999		8/5/1999		8/5/1999	
Date Extracted										
Date Analyzed	5/10/1999		5/11/1999		8/11/1999		8/11/1999		8/11/1999	
Analytical Method No.	8270		8270		8270		8270		8270	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Acenapthene	ND	5	ND	5	11	5	ND	5	ND	5
Acenaphthylene	ND	5	ND	5	ND	5	ND	5	ND	5
Anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(a)anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(a)pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(b)fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(g,h,i)perylene	ND	5	ND	5	ND	5	ND	5	ND	5
Benzo(k)fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Chrysene	ND	5	ND	5	ND	5	ND	5	ND	5
Dibenzo(a,h)anthracene	ND	5	ND	5	ND	5	ND	5	ND	5
1,2-Dibromoethane	ND	1	ND	10	ND	1	ND	1	ND	1
1,2-Dichloroethane	ND	1	ND	10	ND	1	ND	1	ND	1
Fluoranthene	ND	5	ND	5	ND	5	ND	5	ND	5
Fluorene	ND	5	ND	5	13	5	ND	5	ND	5
Indeno(1,2,3-cd)pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
2 - Methylnaphthalene	420	5	400	50	300	5	6.1	5	13	5
Naphthalene	590	5	720	50	290	5	15	5	37	5
Phenanthrene	ND	5	ND	5	19	5	ND	5	ND	5
Pyrene	ND	5	ND	5	ND	5	ND	5	ND	5
METALS										
Sample ID	SB-3		SB-4		SB-9		SB-10		SB-11	
Sample Depth (ft. b.g.s.)	Water Table		Water Table		Water Table		Water Table		Water Table	
Date Collected	5/5/1999		5/5/1999		8/5/1999		8/5/1999		8/5/1999	
Date Extracted										
Date Analyzed	5/13/1999		5/13/1999		8/11/1999		8/11/1999		8/11/1999	
Analytical Method No.	7421		7421		7421		7421		7421	
Collection Method	Bailer		Bailer		Bailer		Bailer		Bailer	
CONSTITUENT(ug/L)	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**	**Conc**	**MDL**
Total Lead	ND	3	ND	3	ND	3	ND	3	ND	3

MDL - Method Detection Limit
ND - Not Detected
NA - Not Analyzed

TABLE 1 - HISTORICAL GROUNDWATER ANALYTICAL DATA
FACILITY NAME: STANLEY OIL BULK FACILITY
CLARE, MICHIGAN

VOLATILES		
Sample ID	SB-13	
Sample Depth (ft. b.g.s.)	Water Table	
Date Collected	8/5/1999	
Date Extracted		
Date Analyzed	8/11/1999	
Analytical Method No.	8260	
Collection Method	Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**
Benzene	620	5
Toluene	5.9	5
Ethylbenzene	720	5
Total Xylenes	26.8	15
MTBE	NA	
1,2,4 - Trimethylbenzene	24	5
1,3,5 - Trimethylbenzene	8	5
POLYNUCLEAR AROMATICS (PNA)		
Sample ID	SB-13	
Sample Depth (ft. b.g.s.)	Water Table	
Date Collected	8/5/1999	
Date Extracted		
Date Analyzed	8/11/1999	
Analytical Method No.	8270	
Collection Method	Bailer	
CONSTITUENT (ug/L)	**Conc**	**MDL**
Acenapthene	15	5
Acenaphthylene	ND	5
Anthracene	ND	5
Benzo(a)anthracene	ND	5
Benzo(a)pyrene	ND	5
Benzo(b)fluoranthene	ND	5
Benzo(g,h,i)perylene	ND	5
Benzo(k)fluoranthene	ND	5
Chrysene	ND	5
Dibenzo(a,h)anthracene	ND	5
1,2-Dibromoethane	ND	5
1,2-Dichloroethane	ND	5
Fluoranthene	ND	5
Fluorene	19	5
Indeno(1,2,3-cd)pyrene	ND	5
2 - Methylnaphthalene	380	5
Naphthalene	260	5
Phenanthrene	31	5
Pyrene	ND	5
METALS		
Sample ID	SB-13	
Sample Depth (ft. b.g.s.)	Water Table	
Date Collected	8/5/1999	
Date Extracted		
Date Analyzed	8/11/1999	
Analytical Method No.	7421	
Collection Method	Bailer	
CONSTITUENT(ug/L)	**Conc**	**MDL**
Total Lead	ND	3

)L - Method Detection Limit
) - Not Detected
. - Not Analyzed

Stanlyey Gas and Oil, Clare bulk

-analytical results are reported in ppb
-NA =Not Analyzed
-ND =Not Detected

MW- I.D.	Benzene	Toluene	Ethyl-benzene	Total Xylene	MTBE	1,2-Dichloro ethane	1,2-Dibromo ethane	Isopropyl benzene	1,3,5-Trimethyl benzene	1,2,4-Trimethyl benzene	Naph	2-Methyl Naph	Additional PNA's
Part 614SI	5	200	74	280	40	5		500	72(h)	68(h)	52(i)	36(i)	
GSI	200(a)	140	18	35	730	360(a)		ID	ID	ID	13	ID	
Sampled/analyzed													
SOW-1													
8.11.04/8.19.04	1820	6	158	490	19	<1	<1	7	48	226	123	105	yes
TPW-1													
12.7.94	2200	83	170	2100	NA	NA	NA		NA	NA	260	NA	yes
4.16.96/4.25.96	2600	98	510	1800	NA	NA	NA		NA	NA		NA	yes
9.4.96/9.16.96	990	130	33	810	NA	NA	NA		NA	NA		NA	yes
10.2.97/10.13.97	2300	40	430	1400	NA	NA	NA		NA	NA		NA	yes
4.19.99/4.23.99	3520	57	710	2478	NA	ND	ND		230	941	181	159	yes
7.25.01/7.26.01	4100	80	700	2244	ND	ND	ND		210	780	590	260	yes
8.11.04/8.17.04	2650	60	466	1710	9	<1	<1	43	146	524	212	71	yes
TPW-2													
12.8.94	330	9.5	150	410	ND	NA	NA		NA	NA	260	NA	yes
4.3.96/4.11.96	540	6	670	330	NA	NA	NA		NA	NA		NA	no
9.4.96/9.16.96	330	ND	310	260	NA	NA	NA		NA	NA		NA	yes
10.2.97/10.13.97	700	4	550	64	NA	NA	NA		NA	NA		NA	no
4.19.99/4.22.99	805	8.5	750	107.5	NA	ND	ND		29.9	14.9	168	108	no
7.25.01/7.27.01	670	5.2	440	17.1	ND	ND	ND		2.3	12	270	200	yes
10.24.02/10.29.02	500	3.4	160	6.8	ND	ND	ND		2.1	11	210	210	no
8.11.04/8.19.04	517	3	188	6	<5	<1	<1	42	<1	<1	137	82	yes
TPW-3													
12.8.94	1800	34	1100	3700	NA	NA	NA		NA	NA	260	NA	yes
4.16.96/4.25.96	1000	29	690	2800	NA	NA	NA		NA	NA		NA	no
9.4.96/9.16.96	640	180	330	1100	NA	NA	NA		NA	NA		NA	yes
10.2.97/10.14.97	780	38	850	180	NA	NA	NA		NA	NA		NA	no
4.19.99/4.23.99	672	ND	588	945	NA	ND	ND		150	767	226	204	YES
7.25.01/7.26.01	790	31	1200	1300	ND	ND	ND		260	1500	220	670	yes
10.24.02/10.30.02	150	1	200	231	ND	ND	ND		69	370	220	160	YES
8.11.04/8.17.04	277	ND	84	92	<5	<1	<1	3	4	91	15	<5	NO

Stanlyey Gas and Oil, Clare bulk

-analytical results are reported in ppb
-NA =Not Analyzed
-ND =Not Detected

MW- I.D.	Benzene	Toluene	Ethyl-benzene	Total Xylene	MTBE	1,2-Dichloro ethane	1,2-Dibromo ethane	Isopropyl benzene	1,3,5-Trimethyl benzene	1,2,4-Trimethyl benzene	Naph	2-Methyl Naph	Additional PNA's
Part 201/RBSL	5	790	74	280	40	5		660	370(a)	83(a)	210	1,250	ID
GSI	200(a)	190	18	35	230	360(a)		ID	ID	ID	15	ID	
Sampled/analyzed													
TPW-7A													
1.10.95	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	
7.25.01/7.26.01	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	ND	NO
10.24.02/10.29.02	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	ND	NO
10.27.04/10.28.04	<1	<1	<1	<3	<5	<1	<1	<1	<1	<1	<5	<5	NO
TPW-7B													
1.10.95	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	
10.27.04/10.28.04	<1	<1	<1	<3	<5	<1	<1	<1	<1	<1	<5	<5	NO
TPW-9													
12.8.94	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	ND	NA	NO
4.16.96/4.25.96	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	ND	NA	NO
9.4.96/9.16.96	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	ND	NA	NO
10.2.97/10.10.97	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	ND	ND	NO
4.19.99/4.22.99	ND	ND	ND	ND	NA	NA	NA	NA	ND	ND	ND	ND	NO
7.25.01/7.27.01	ND	ND	ND	ND	NA	NA	NA	NA	ND	ND	ND	ND	NA
10.23.02/10.29.02	ND	ND	ND	ND	NA	NA	NA	NA	ND	ND	ND	ND	NA
8.11.04/8.19.04	<1	<1	<1	<3	<5	<1	<1	<1	<1	<1	<5	<5	NO
TPW-14													
12.18.86	5.4	8.2	3.3	5.3	NA	NA	NA	NA	NA	NA	NA	NA	NA
4.3.96/4.11.96	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	ND	NA	NO
9.4.96/9.16.96	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	ND	NA	NO
10.2.97/1.10.97	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	ND	NA	NO
4.19.99/4.22.99	ND	ND	ND	ND	NA	ND	ND	NA	ND	ND	ND	ND	NO
7.25.01/7.27.01	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	ND	NA
10.24.02/10.29.02	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	ND	NA
8.11.04/8.19.04	<1	<1	<1	<3	<5	<1	<1	<1	<1	<1	<5	<5	NO
TPW-18													
9.4.96/9.15.96	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	ND	NA	
10.2.97/10.10.97	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	ND	ND	
4.19.99/4.22.99	ND	ND	ND	ND	NA	ND	ND	NA	ND	ND	ND	ND	
7.25.01/7.27.01	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	ND	
10.24.02/10.29.02	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	ND	
10.27.04/10.28.04	<1	<1	<1	<3	<5	<1	<1	<1	<1	<1	<5	<5	NO

Stanlyey Gas and Oil, Clare bulk

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-ND =Not Detected

MW- I.D.	Benzene	Toluene	Ethyl-benzene	Total Xylene	MTBE	1,2-Dichloro ethane	1,2-Dibromo ethane	Isopropyl benzene	1,3,5-Trimethyl benzene	1,2,4-Trimethyl benzene	Naph	2-Methyl Naph	Additional PNA's
Tier 1 RBSL	5	700	NA	280	40	5	0.05	500	ID	ID	520	250	
GSI	200(5)	140	18	55	730	360(5)		ID	ID	ID	105	ID	
Sampled/analyzed													
TPW-19													
4.19.99/4.22.99	ND	1.1	ND	ND	NA	ND	ND	NA	ND	ND	NA	NA	NA
5.5.99/5.10.99	ND	ND	ND	ND	NA	ND	ND	NA	ND	ND	ND	ND	NO
7.25.01/7.27.01	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	ND	NA
10.24.02/10.29.02	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	ND	NA
8.11.04/8.19.04	<1	<1	<1	<3	<5	<1	<1	<1	<1	<1	<5	<5	NA
TPW-20													
4.19.99/4.26.99	15.5	ND	ND	ND	NA	ND	ND	NA	ND	ND	ND	8.4	YES
7.25.01/7.27.01	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	ND	NO
10.24.02/10.29.02	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	ND	NO
8.18.04/8.19.04	<1	<1	<1	<3.	<5	<1	<1	<1	<1	<1	<5	<5	YES
TPW-21													
4.19.99/4.26.99	ND	ND	ND	ND	NA	ND	ND	NA	ND	ND	ND	ND	NO
4.17.03/4.22.03	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	ND	NO
10.27.04/10.28.04	<1	<1	<1	<3	<5	<1	<1	<1	<1	<1	<5	<5	NO
TPW-23													
7.25.01/7.27.01	150	5.4	66	196.9	ND	NA	NA	NA	71	240	ND	420	NO
10.24.02/10.30.02	86	1	59	144.4	5.6	NA	NA	NA	47	140	84	290	YES
10.27.04/10.28.04	45	1	45	100	<5	<1	<1	5	22	90	24	23	NO
TPW-24													
7.25.01/7.27.01	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	ND	NA
10.24.02/10.30.02	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	ND	NO
10.27.04/10.28.04	<1	<1	<1	<3	<5	<1	<1	<1	<1	<1	<5	<5	NO

Stanlyey Gas and Oil, Clare bulk

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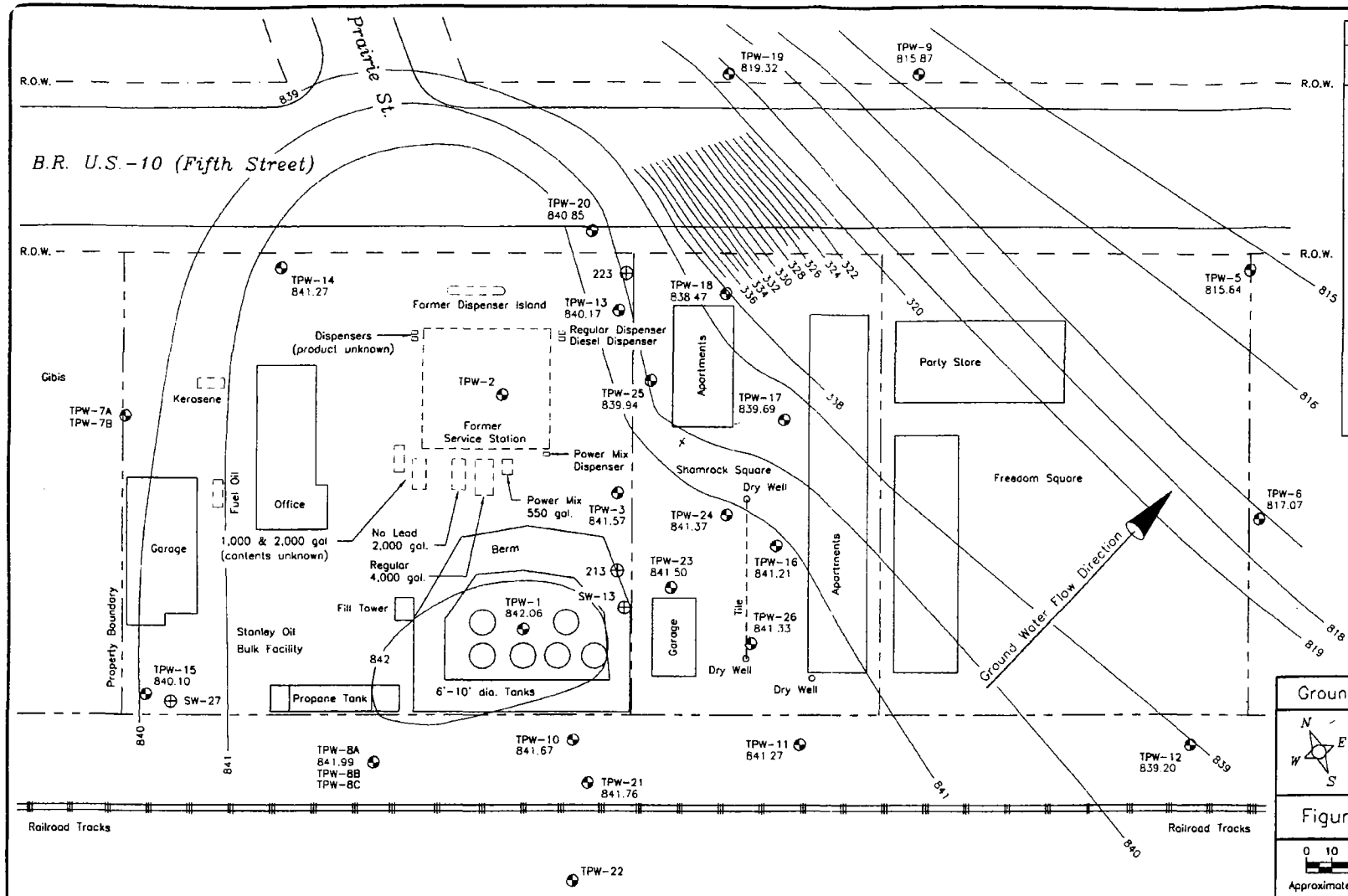
-NA =Not Analyzed
-ND =Not Detected

MW- I.D.	Benzene	Toluene	Ethyl-benzene	Total Xylene	MTBE	1,2-Dichloro ethane	1,2-Dibromo ethane	Isopropyl benzene	1,3,5-Trimethyl benzene	1,2,4-Trimethyl benzene	Naph	2-Methyl Naph	Additional PNA's
Tier 1 RBSL	5	790	74	280	40	5		300	77 (1)	53 (1)	330	160	
GSI	200(x)	140	18	35	730	360(x)		ID	ID	ID	18	ID	
Sampled/analyzed													
TPW-27													
10.24.02/10.29.02	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	ND	NO
8.11.04/8.19.04	<1	<1	<1	<3	<5	<1	<1	<1	<1	<1	<5	<5	NO
TPW-28													
10.24.02/10.29.02	150	10	1300	232	ND	NA	NA	NA	170	400	470	390	YES
8.11.04/8.19.04	70	1	428	117	<5	<1	<1	30	23	74	198	128	NO
TPW-30													
10.24.02/10.29.02	160	120	4600	15300	ND	NA	NA	NA	1900	5700	1200	1600	YES
8.11.04/8.19.04	79	14	2500	9340	<5	<1	<1	99	422	1800	543	1080	YES
TPW-32													
10.24.02/10.29.02	2900	71	1500	4920	ND	NA	NA	NA	440	1500	350	620	YES
8.11.04/8.19.04	1200	4	468	604	38	<1	<1	26	156	562	112	118	YES



Ground Water Level Observation of 7/25/2001				
Location	Screened Interval	Top of Casing Elevation	Static Water Level	Ground Water Elevation
TPW-1	4'-6'	844.94	2.88	842.06
TPW-2	2'-7'	845.24	3.81	841.43
TPW-3	2'-7'	844.91	3.34	841.57
TPW-5	23'-28'	843.64	28.00	815.64
TPW-6	21'-26'	843.07	26.00	817.07
TPW-7A	10'-13.5'	845.64	NM	NM
TPW-8A	3'-8'	845.95	3.96	841.99
TPW-9	24'-29'	843.87	28.00	815.87
TPW-10	0'-5'	844.96	3.29	841.67
TPW-11	0'-5'	*844.64	3.37	*841.27
TPW-12	0'-5'	842.66	3.46	839.20
TPW-13	1'-6'	844.88	4.17	840.71
TPW-14	1'-6'	844.91	3.64	841.27
TPW-15	1'-11'	846.58	6.48	840.10
TPW-16	2.2'-5.2'	845.11	3.90	841.21
TPW-17	2.6'-5.6'	845.19	5.50	839.69
TPW-18	3'-6'	844.97	6.50	838.47
TPW-19	20'-25'	844.32	25.00	819.32
TPW-20	0'-5'	844.16	3.31	840.85
TPW-21	0.5'-4'	844.90	3.14	841.76
TPW-22	0.5'-4'	845.03	NM	NM
TPW-23	1'-6'	845.44	3.94	841.50
TPW-24	0.2'-4.5'	844.59	3.22	841.37
TPW-25	0'-5'	844.78	4.84	839.94
TPW-26	0'-5'	844.75	3.42	841.33
SW-13	3.3'-6.3'	*844.88	4.33	*840.55
213	8'-23.7'	848.65	NM	NM
223	12'-17'	848.40	NM	NM

MN=Not Measured

*=Elevation is considered unreliable until T.O.C. can be field verified

Note:

Ground water elevations in feet relative to average mean sea level. Contour interval is 1 foot. Static water level data collected on 7/25/01 by Compliance, Inc.

Homedco

Note:

Property boundaries and buildings of Shamrock Square & Freedom Square are estimated.

Adapted from Paul B. Lapham & Associates, Inc. C-946064 drawing dated 12/21/94.

LEGEND

- TPI Petroleum, Inc. Well
- Clare Well Field Group Well
- Former UST/Dispenser/Island/Building (estimated location)

Ground Water Elevations/Contours

N E W S

LOCATION:
Stanley Oil Bulk Facility
499 W. Fifth St. (B.R. U.S.-10)
Clare, Michigan

Figure # 3

DRAWING DATE: 2-13-02
PROJECT NUMBER: 1043
PROJECT MANAGER: DAH
CAD FILE: 1043-4-7
DRAWN BY: BAP

0 10 20 40
Approximate scale in feet

Compliance INC
Environmental Engineering & Regulatory Consulting
Traverse City (231) 922-7400 Livonia (734) 953-6486

ATTACHMENT D

Clare Ready for Re-Use Report

Planning for the Future:

A Reuse Planning Report for the Clare Water Supply Superfund Site

November 2005

EPA Region 5
Superfund Redevelopment Initiative

funded by
United States Environmental Protection Agency

prepared for
City of Clare, Michigan

prepared by
E^2 Inc.

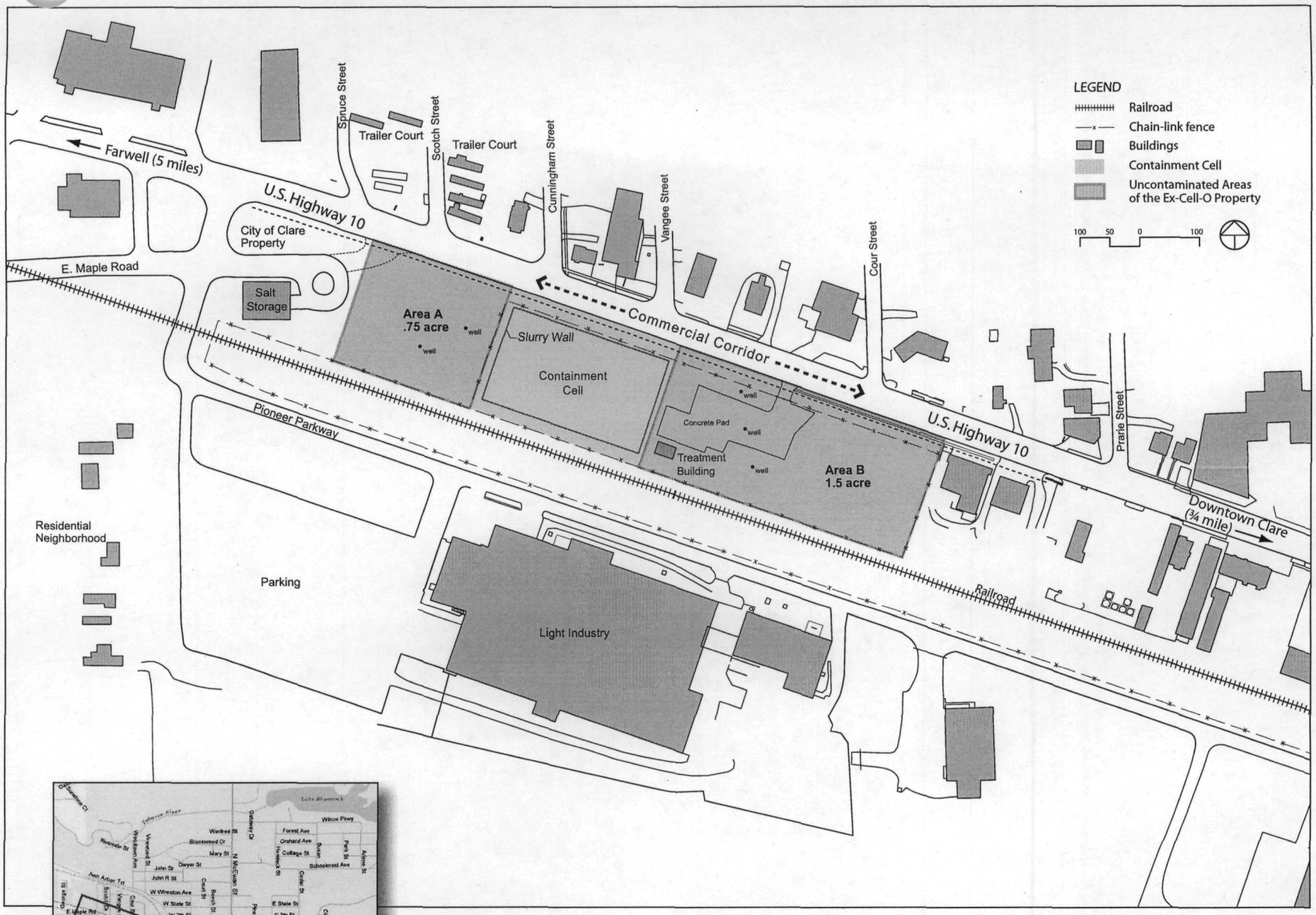
Introduction

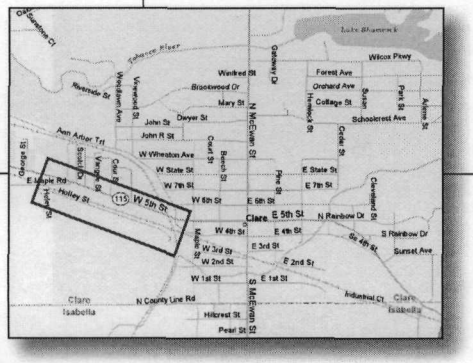
EPA has selected the Clare Water Supply Superfund site as a 2005 demonstration project for the Return to Use (RTU) Initiative, a national initiative that is part of the EPA's Superfund Redevelopment Initiative. The primary purpose of the RTU Initiative is to remove barriers at cleaned up Superfund sites that are not necessary for the protection of human health and the environment.

EPA provided the services of environmental consultants E² Inc. (the project's consultant team) to the City of Clare to help identify obstacles to reuse and develop strategies for eliminating those obstacles. EPA Region 5 hopes to support the reuse of the Clare Water Supply Superfund site by addressing the inclusion of clean parcels of land currently considered to be part of the site.

This report, prepared by the project's consultant team, addresses repositioning clean parcels of the site for reuse and presents alternative reuse strategies to ensure the protectiveness of the site's remedy. The report highlights key reuse considerations, opportunities, and challenges that the City of Clare, EPA Region 5, and the Michigan Department of Environmental Quality (MDEQ) will need to keep in mind as the site is returned to use.

Table of Contents





Ex-Cell-O Property
Clare Water Supply Superfund Site

Clare Water Supply Superfund Site

Location

The Clare Water Supply Superfund site covers significant portions of downtown Clare, Michigan, and includes the city's municipal wellfield. The site is bounded to the north by West 5th Street (U.S. Highway 10). The Ann Arbor Railroad defines the eastern edge of the site. An industrial area is located in the western area of the site. A 2.86-acre parcel referred to as the Ex-Cell-O property is located within the site's boundaries along U.S. Highway 10 near the intersection of Pioneer Parkway. This report focuses on the Ex-Cell-O property because it contains two uncontaminated areas that could be available for commercial and industrial uses. These areas are shown as Area A and B on the map to the left.

Site History + Contamination

From 1966 to 1981, operations at the Weltronic facility and several other manufacturing and retail companies located in an industrial area in the City of Clare resulted in the contamination of the area's soils and groundwater. The facilities released contaminants from leaking underground storage tanks, above ground waste piles, overflowed sludge lagoons, and from vapor degreasers that leaked through floor drains inside one of the facilities. As a result, two of the municipal wells that serve the City of Clare were contaminated with volatile organic compounds such as trichloroethene and intermittently by hydrocarbons such as benzene.

Site Remediation

In 1990, EPA prepared an Interim Action Record of Decision (ROD) to provide wellhead treatment of the water supply until the Remedial Investigation and Feasibility Study (RI/FS) was completed. A second ROD signed in 1992 selected a combined remedy for contaminated groundwater and soils. In 1995 and 2004, EPA, in concurrence with MDEQ, issued an Explanation of Significant Differences that slightly modified the remedy outlined in the 1992 ROD.

The final remedy for the site included wellhead treatment of municipal well water, in-situ and ex-situ encapsulation and treatment of contaminated soils, and active groundwater restoration. On-site groundwater treatment includes pumping and treatment by air stripping. A treatment and containment cell for contaminated soils was established on the Ex-Cell-O property. A slurry wall surrounds the containment cell to prevent leaching. The cell and treatment buildings are also enclosed by chain link fence. The site's remedy was implemented between 1991 and 1999. EPA Region 5 signed off on the site's Preliminary Close out Report on March 31, 1999.

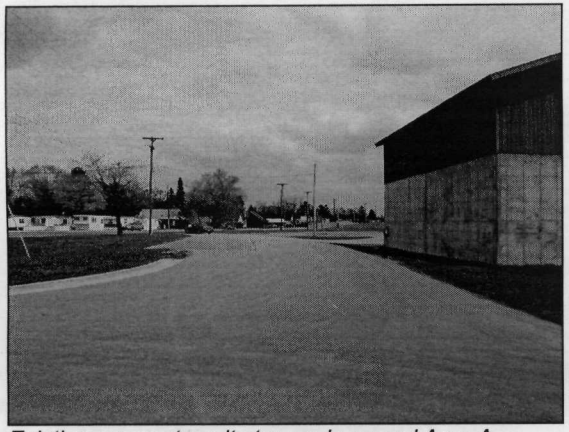
Ownership

The Clare Water Supply Superfund site consists of multiple properties owned by different property owners. The site's Ex-Cell-O is currently owned by ENPRO Industries.

Current Site Status

The site's remedy is in place and is protective of human health and the environment. Contaminated groundwater migration is also under control and ground water sampling and monitoring are ongoing. A chain-link fence surrounds the containment cell and the area to the east where treatment buildings are located. EPA's second Five Year Review of the site's remedy is anticipated in 2006.

Containment Cell at the Ex-Cell-O Property

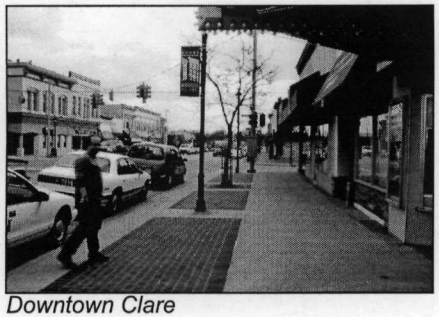


Existing access to salt storage barn and Area A

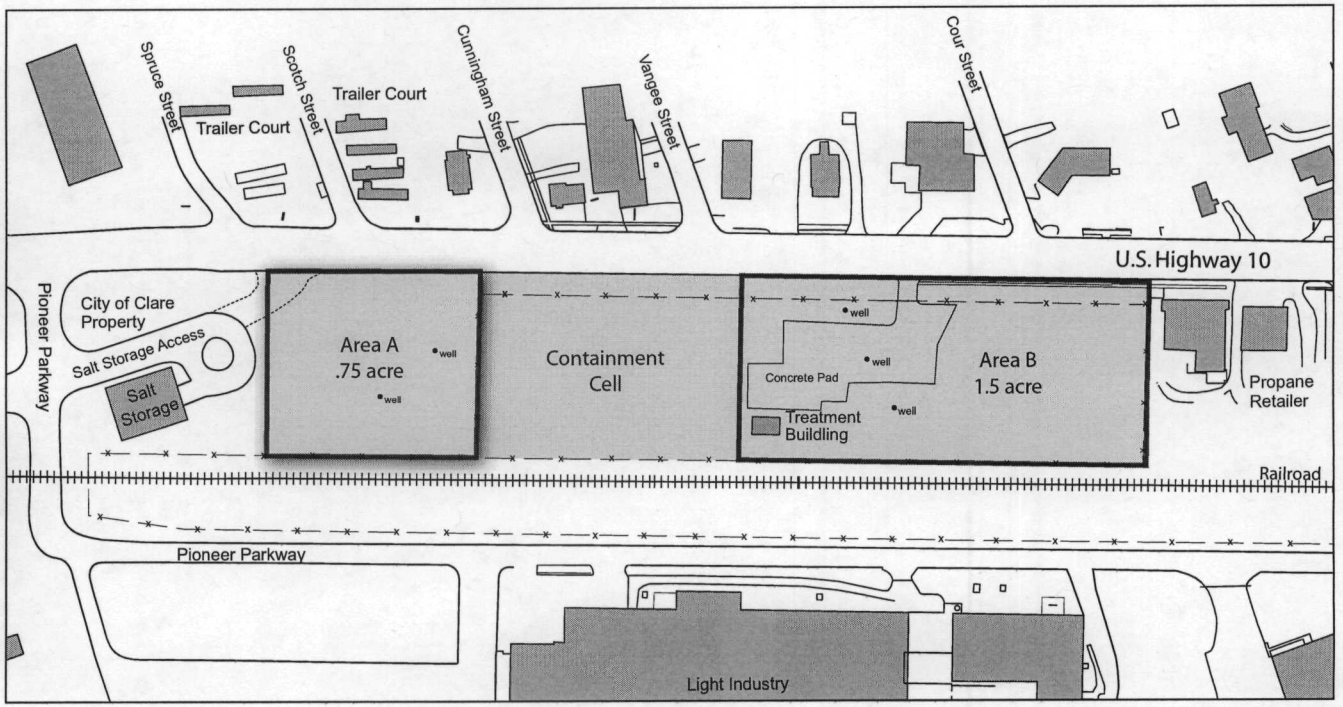
View along U.S. Highway 10 at the containment cell

View west from Area B access point

City of Clare sign located in Area A



Downtown Clare



Looking to the Future: Reuse Considerations at the Ex-Cell-O Property

The 2.86-acre Ex-Cell-O property is located along U.S. Highway 10, near the intersection of Pioneer Parkway, and the containment cell and two uncontaminated areas comprise the property. The containment cell, approximately one acre in size, is centrally located within the property. The two uncontaminated areas are located on either side of the cap: Area A, a .75-acre area located west of the cap, and Area B, a 1.5-acre area located east of the cap. Area A is accessed from a salt storage barn drive and Area B is accessed from U.S. Highway 10.

While land uses are restricted on the containment cell, Area A and Area B are uncontaminated and well-suited for commercial and industrial uses. The property is well-situated along the commercial corridor of U.S. Highway 10, within close proximity to downtown Clare. Area A and Area B have excellent road frontage and infrastructure and are easily accessible. The property also marks the western entrance to the City of Clare; a sign welcoming visitors is located at the northwest corner of the containment cell.

Local Reuse Interests

The parcel is zoned for light industrial land uses and is located within an industrial / commercial corridor along U.S. Highway 10. The City of Clare has expressed interest that the parcel be redeveloped with uses that are consistent with the area's zoning. The city would also be interested in recreational opportunities if the site's remedy limits commercial development opportunities on other portions of the property.

The City of Clare will need to work with ENPRO Industries to determine the company's interest in the future use of the property. If transfer of the property's ownership is a viable option that can help foster the reuse of the Ex-Cell-O property, EPA has several tools available that can help address potential liability issues.

Property Zoning

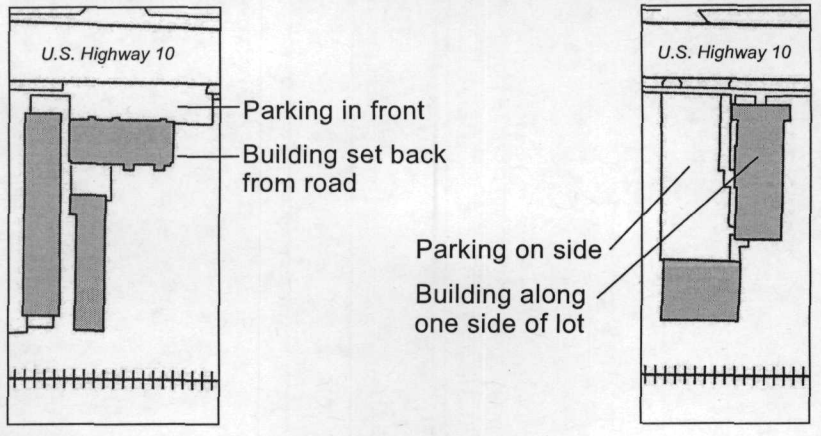
The Ex-Cell-O property is zoned for light industrial land uses. In accordance with City of Clare Code of Ordinances Section 52-241, the following commercial (C-2) uses are also permitted within the industrial district: animal hospitals, beverage bottling distributors, body shops, building contractors' storage lots, coal yard storage, commercial greenhouses, dairy plants, electrical contractors, elevators, farm machinery sales and repairs, lumber and building material sales and storage, machine shops, mobile home sales, newspaper printing, pet boarding, plumbing contractors, public garages, railway sidings and switches, road contractor storage lots, truck terminals, used car sale lots, warehouses, welding shops, woodworking shops.

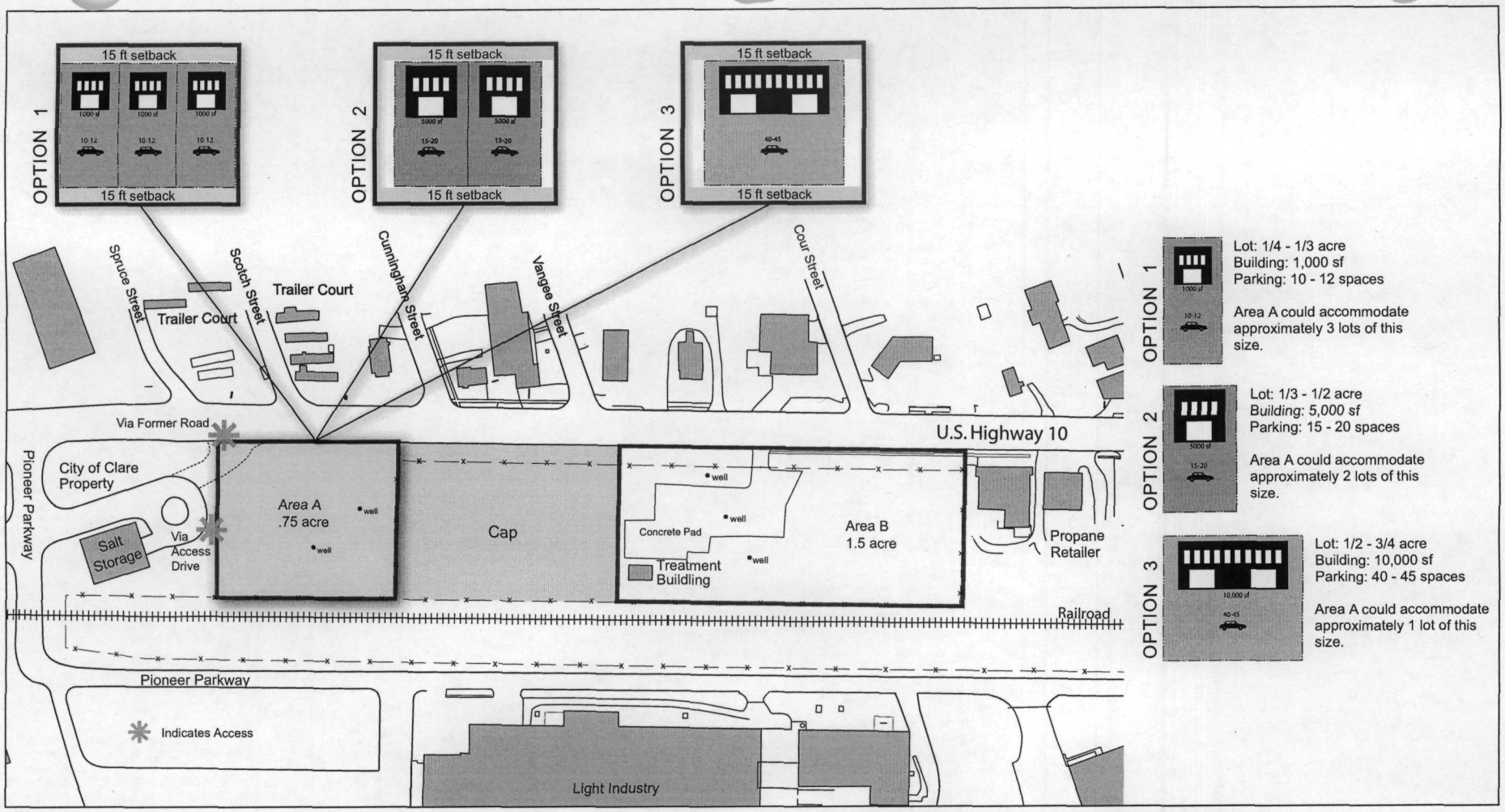
Additional permitted uses include: communication towers, fertilizer manufacture, machinery assembly, machinery manufacture, and structural steel fabricating shops.

The C-2 zoning designation requires that buildings maintain a minimum setback of 15 feet from front and rear property lines. There is no minimum setback requirement for sidelines.

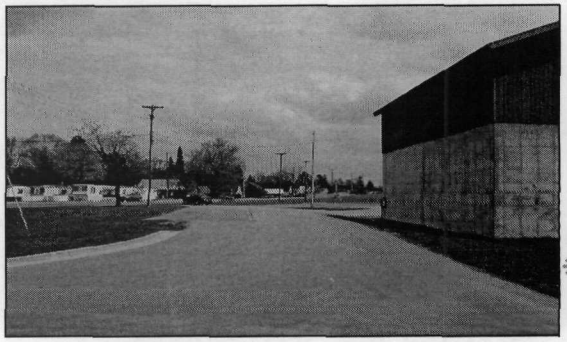
Surrounding Area

Commercial properties along U.S. Highway 10 vary in size, tax revenue, and services. Lots range from 50 to 200 feet of road frontage. The average depth for lots in this corridor is 150 to 200 feet. Commercial and industrial buildings in this area range from 1,000 square feet to over 30,000 square feet. Several lot configurations exist within this commercial corridor. Typically, buildings are set back from the road, with parking in the front along U.S. Highway 10. Another common configuration justifies the buildings along one side of the property, with parking in either the front or rear of the lot. The illustrations below highlight these configurations.





Access: Former road alignment could be reopened to allow from U.S. Highway 10



Access: Off Pioneer Parkway via salt storage access drive

Reuse Potential

The Ex-Cell-O property is approximately 170 feet in depth, with 720 feet of road frontage. The containment cell, located near the center of the property, is approximately 300 feet wide and 170 deep. Based on commercial development patterns—lot size and layout—along the U.S. Highway 10 corridor, there is significant potential for both uncontaminated areas of the Ex-Cell-O property to be repositioned for future use. Area A, located east of the containment cell, and Area B, located west of the containment cell within the fenced area, will be described further in subsequent pages of the report.

Area A Opportunities

Area A, located west of the containment cell, is approximately .75 acres in size and is located adjacent to a salt storage building owned by the city. It is currently accessed from the east by a salt storage barn access road. The intersection of Pioneer Parkway and U.S. Highway 10 was recently established. The former road alignment is in the northwest corner of Area A and is shown on the map on the adjacent page with a dashed line.

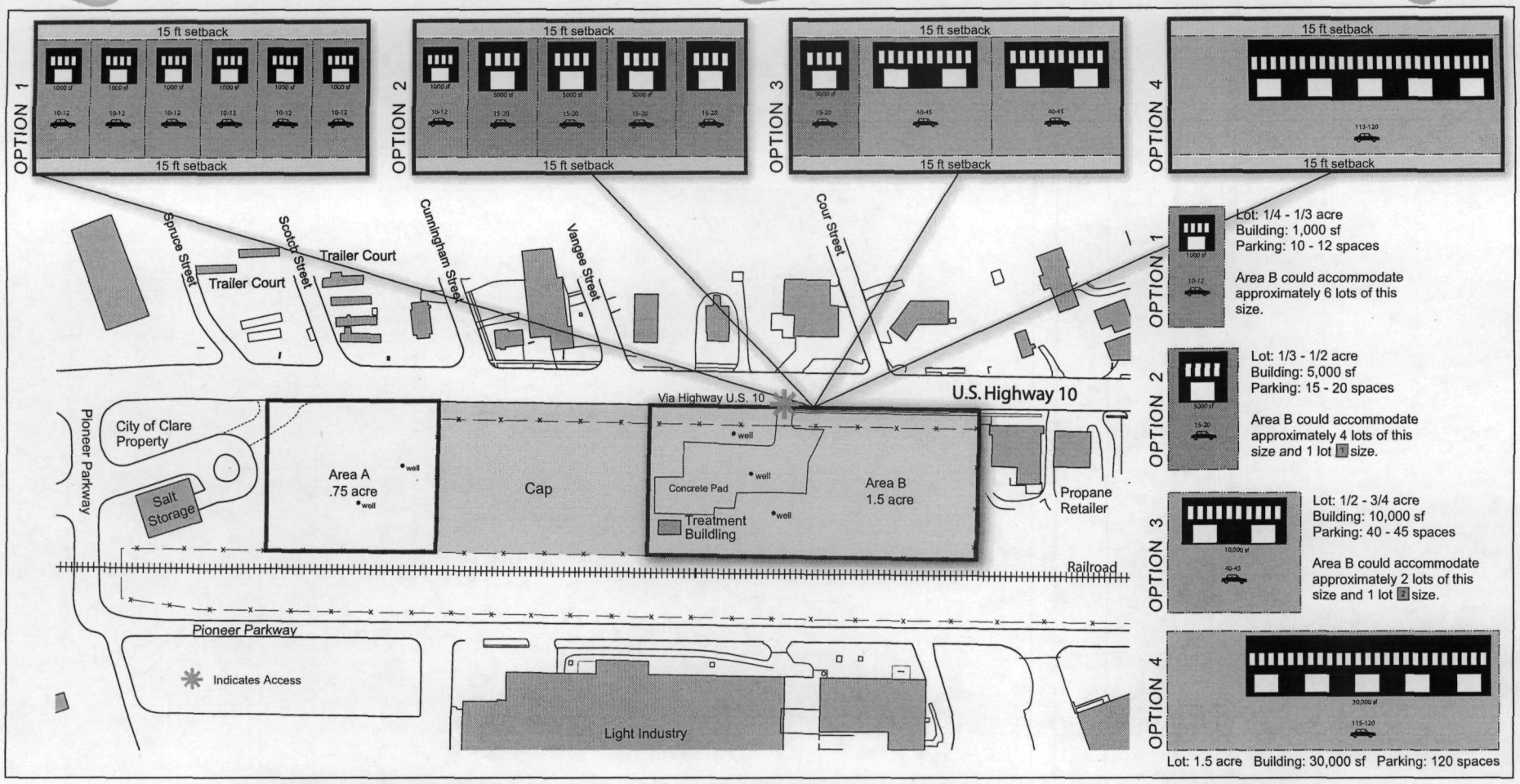
This area could accommodate several future use scenarios. The diagram on the left illustrates different lot configurations, with building sizes ranging from 1,000 to 10,000 square feet in size.

Key Considerations

Access and coordination with on-site ground water monitoring wells are two key reuse considerations that need to be kept in mind in Area A.

There are two potential access points for Area A, indicated on the map by asterisks. The former road layout, if reopened, would allow access from U.S. Highway 10. Though this option would allow entry from a major road, the access point is located in close proximity to the adjacent intersection and along a busy road corridor with many existing drives and business entrances. Alternatively, Area A could be accessed from Pioneer Parkway. The drive that accesses the salt storage building could be extended to access the site from the east. A shared drive and combined parking would also reduce impervious pavement in the area.

Two monitoring wells are currently located within Area A. The City of Clare can work with ENPRO Industries and EPA to determine if the wells could be relocated to accommodate reuse. If the wells cannot be relocated, the reuse of Area A will need to be coordinated with the ongoing use of the wells, including granting EPA access to the monitoring wells. The reuse plans may be able to accommodate the wells in place through careful site layout. For example, Area A could be designed so that the wells are within parking areas. Care would need to be taken so that the wells were not damaged during construction and that they could be successfully removed when no longer needed.

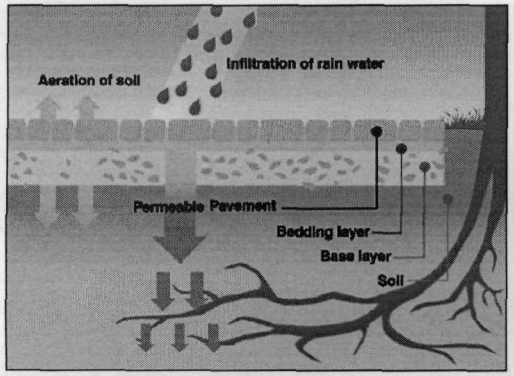


Ex-Cell-O Property
Clare Water Supply Superfund Site

Area B Opportunities

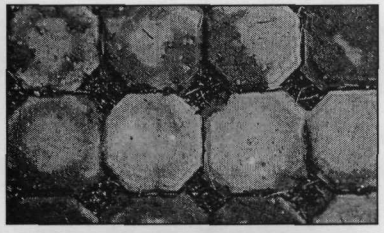
Area B, located east of the containment cell, is approximately 1.5 acres in size and offers 160 yards of road frontage. The area is fenced and can be accessed from U.S. Highway 10 through a locked gate. A concrete slab, remaining from prior uses occupies most of the western portion of the site. There are no known restrictions to removing the slab to allow for reuse of the site.

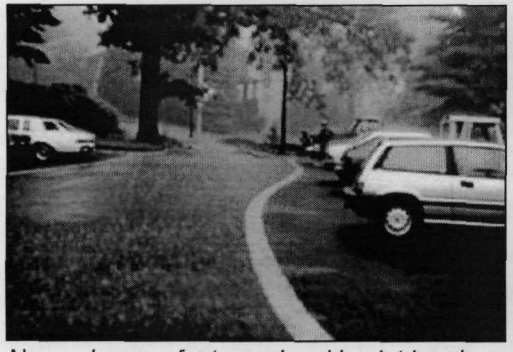
This area could accommodate several development scenarios. The diagram on the left illustrates different lot configurations of building sizes ranging from 1,000 to 30,000 square feet.



Left: *Diagram of water flow through porous paving*

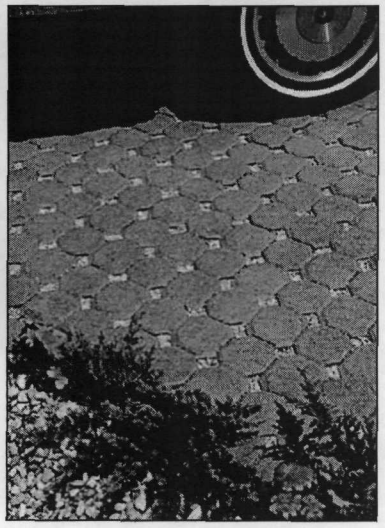
Below: *Top view of block paving. Beveled edges allow for water to filter through to underlying soil*





Above: *Image of a 'green' parking lot in rainy weather. Water infiltrates through to underlying soil and helps to recharge local ground water rather than being removed by stormwater systems.*

Right: *Side view of block paving*



Key Considerations

As with Area A, access and coordination with on-site ground water monitoring wells are two key reuse considerations that need to be kept in mind in Area B.

Existing access from U.S. Highway 10 is centrally located along Area B. Maintaining this access point as the single entrance to the area would minimize the need for additional entrances along the highway. A shared drive and combined parking would also reduce impervious pavement in the area.

Three monitoring wells and a treatment building are currently located within Area B. The City of Clare can work with ENPRO Industries and EPA to determine if the wells could be relocated to accommodate reuse. If the wells cannot be relocated, the reuse of Area B will need to be coordinated with the ongoing use of the wells, including granting EPA access to the monitoring wells and treatment building. One option would be to phase future uses with the first phase beginning on the eastern part of the property. The remaining area could be used, after it is determined the wells and buildings are no longer needed. Or the reuse plans may be able to accommodate the wells in place through careful site layout. For example, Area B could be designed so that the wells are within parking areas. Care would need to be taken so that the wells were not damaged during construction and that they could be successfully removed when no longer needed. The possibility may also exist to reuse the treatment building to support future uses.

To maximize future use opportunities, buildings could be clustered and parking areas combined. Clustering buildings may also reduce infrastructure costs by focusing infrastructure in one area and reduce construction costs, as several buildings could be located within one structure. Design alternatives could also minimize impervious surfaces. Some options may include pervious paving or "green parking lots," innovative designs that reduce paved areas, or installing rain gardens to absorb parking run-off.

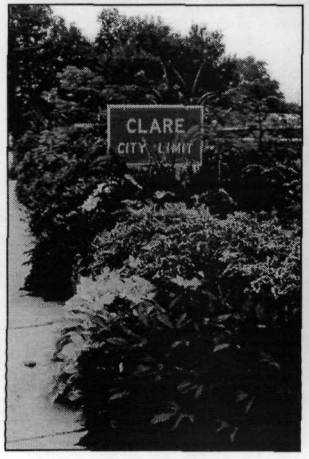
Containment Cell Opportunities

The containment cell is currently fenced and can only be accessed from within Area B. EPA's 1997 ROD Amendment refers to both access and deed restrictions for this portion of the Ex-Cell-O property in order to control future activities and maintain the protectiveness of the remedy. EPA would need to evaluate the capacity of the remedy to support future use scenarios. Recreation is a common reuse of containment cells due to minimal soil disturbance by recreational activities.

Recreational opportunities for the containment cell area could include a small play field, a pocket park for the surrounding neighborhood, or a showcase garden marking the entrance to the City of Clare.

Left: *Containment cell*

Below: *Possible recreational opportunities*



Above: *Image of a 'pocket park' as a water conservation demonstration garden.*

Left: *City entry garden example*

Key Considerations

There are several key considerations that need to be kept in mind for the reuse of the containment cell area.

Topography is a major consideration for reuse of the containment cell. Significantly higher than the surrounding topography, care should be given to the selection of plants or objects to avoid oversized, out-of-scale appearance. Because of the cell's height, moderate to steep side slopes form the perimeter of the containment cell. Pedestrian access may also be an issue because the side slopes would not be universally accessible and grading could be restricted due to the remedy in place. In addition, the containment cell is adjacent to U.S. Highway 10 and fencing may be necessary if used for recreation to prevent people and objects in play from entering the road.

Reuse also depends on whether the remedy components remain in place or if contaminated soils could be transported to RCRA handling facility. There may be an opportunity for commercial reuse if the containment cell were removed, although this may be cost-prohibitive. Under this scenario, the containment cell area could accommodate approximately the same reuse options as Area A.

Height of Containment Cell (approximately six feet)

Market Value

Within in the past year, commercial real estate within the City of Clare sold in the range of $62,000 to $2,100,000. Commercial real estate that sold for approximately $60,000-70,000 included a 672-square-foot building on a .59-acre lot. Properties that sold for approximately $120,000-130,000 contained a 4200-square-foot building on a .9-acre lot and a 1000-square-foot building on a .46 acre lot. Within the past year, an industrial property containing a 9,600 square foot building on a two-acre lot sold for $275,000. In late 2005, a property with 4,000 square feet of retail space and on-site parking located near the Ex-Cell-O property listed for $190,000.

Tax Revenue

The Ex-Cell-O property is assessed at $36,000 and with a taxable value of $14,468, the property generates close to $900 in annual tax revenues for the city. The land value for this property is $72,000. A sample of other properties along the U.S. 10 corridor was reviewed based on the information available for assessed value, lot size, and taxes generated for the city. That information is provided in adjacent table. The average assessed value of those properties is $99,000, with an average taxable value of $76,400. The average land value is $159,000. In 2004, these properties generated an average of $3,400 in tax revenues for the City of Clare.

Review of the local commercial and industrial real estate market in the City of Clare indicates that Area A and Area B at the Ex-Cell-O property could likely support multiple future use opportunities. To facilitate the property's reuse, the property owner could transfer or sell the property to the city or a public agency. Through public ownership, the property could be assembled or divided into tailored real estate parcels or could be offered at lower than market price to encourage its reuse. Commercial or industrial development on the uncontaminated portions of the Ex-Cell-O property would also generate additional tax revenues for the city.

W Fifth Street Commerical Corridor Inventory, Clare, MI

Parcel Number	Owner Name	Property Address	Assessed Value	Taxable Value	Acreage	Land Value	2004 Taxes
051-140-001-00	Stanley Fuel Gas & Oil Company	515 W Fifth Street	$175,100	$175,100	0.41	$47,600	$1,436.58
051-034-301-09	ENPRO *Industries*	519 W Fifth Street *(Ex-Cell-O property)*	$36,000	$14,468	2.86	$72,000	$862.80
051-034-300-02	Randall's Auto Repair LLC	524 W Fifth Street	$47,500	$47,500	0	$95,000	$2,814.01
051-320-002-50	Seiter Brothers	436 W Fifth Street	$16,300	$9,148		$8,200	$591.15
051-034-206-21	Seiter Brothers	420 W Fifth Street	$2,700	$1,479		$5,400	$315.36
051-034-401-08	R&R Real Estate	W Fifth Street	$12,900	$2,046	0.39	$25,800	$115.39
051-168-001-00	CMC Federal Credit Union	650 W Fifth Street	$574,300	$399,739		$1,148,600	$22,454.47
051-350-003-00	Chemical Bank	625 W Fifth Street	$83,300	$59,218		$166,600	$3,326.42
051-350-007-00	McGuire's Chevrolet	712 W Fifth Street	$259,500	$181,390		$519,000	$12,400.58
051-350-014-00	McMillan 80, LLC	624 W Fifth Street	$101,700	$78,597		$203,400	$5,529.49
051-350-015-00	CMC Federal Credit Union	626 W Fifth Street	$10,000	$7,140		$20,000	$401.04
051-440-001-00	Bob's Tire Store	528 W Fifth Street	$79,200	$55,162		$158,400	$3,250.65
051-140-003-00	Gibis L. & Sons Inc	509 W Fifth Street	$29,100	$20,610		$58,200	$1,229.13
051-140-001-00	Stanley Fuel Gas & Oil Company	513 W Fifth Street	$175,100	$175,100	0.41	$47,600	$1,436.58
051-140-005-00	Stanley Fuel Gas & Oil Company	W Fifth Street	$15,800	$15,800	0.21	$31,600	$642.45
051-140-006-00	Stanley Fuel Gas & Oil Company	499 W Fifth Street	$44,100	$44,100		$88,200	$1,756.39
051-320-002-00	Seiter Brothers	434 W Fifth Street	$20,400	$12,199		$8,200	$811.03
	Average of Properties Listed:		$99,000	$76,400		$159,047	$3,493

Integrating Remedy + Reuse: EPA Site Considerations

EPA Region 5 may also be able to take action to ensure that there are no barriers to the future use of the Ex-Cell-O property of the Clare Water Supply Superfund site that are not necessary to ensure the protection of human health and the environment.

Contaminated soils within the Clare Water Supply Superfund site were excavated and contained on a portion of the Ex-Cell-O property in 1999. In 2001, EPA performed a Five-Year review and confirmed that the remedy was protective of human health and the environment. However, there are two uncontaminated areas, Area A and Area B, as described in this report, located on either side of the containment cell within the Ex-Cell-O property, that could be available for reuse. Because contaminants were never located in these areas, they do not need to be considered part of the NPL site.

Currently, there are two potential approaches that EPA uses to remove a parcel from a National Priorities List (NPL) site: an explanation of significant differences (ESD), which changes the definition of the site as it was laid out in the Record of Decision (ROD), and a partial deletion. While both approaches have been used, writing an ESD to change the definition of a site may be faster for two reasons. First, it is mandatory for EPA to notify the public in the Federal Registrar of their intent to partially delete any property from an NPL site. The notice remains there for 30 days. Placing an ESD in the Federal Registrar is not mandatory, although EPA must publish a notice of availability and a brief description of the ESD in a major local newspaper of general circulation. Second, EPA must respond in writing to any comments that they receive on a partial deletion and must extend the comment period by a minimum of 30 days upon timely request, which can extend the typical two-to-three month process. If EPA does receive public comments on an ESD, they are not required to respond to comments in writing.

In addition to these procedures, EPA may also provide comfort/status letters to interested parties (e.g., investors, developers) clarifying that EPA is not considering remedial actions on a particular parcel if it is located contiguous to the site.

Conclusion + Next Steps

This report has highlighted key considerations, opportunities, and challenges that the City of Clare, EPA Region 5, and MDEQ will need to keep in mind regarding the potential future use of the 2.86-acre Ex-Cell-O property portion of the Clare Water Supply Superfund site. While access and monitoring well considerations will need to be kept in mind for Area A and Area B at the property, these two uncontaminated areas also clearly offer significant opportunities for future use opportunities. The site's fenced containment cell area may also offer limited opportunities for recreational uses or for signage and landscape plantings at the property.

In order to facilitate the property's return to use, next steps include:

1. *Clarify the property owner's interests at the Ex-Cell-O property and consider opportunities to transfer ownership of the property to the City of Clare or a specially designated public authority.*

The City of Clare can work with ENPRO Industries to determine the property owner's interests in future use opportunities at the Ex-Cell-O property. If the property owner has no interest in the property's future use, the site's ownership could be transferred to the City of Clare or a specially designated public authority. Public ownership of the property would qualify the city for state, federal, and private sector funding resources, and allow the city to steward the property back into successful use.

2. *Evaluate road access opportunities and monitoring well locations as part of the consideration of future use opportunities for Area A and Area B at the Ex-Cell-O property.*

This report has provided an initial overview of two key considerations – road access and monitoring well locations – related to the future use of Area A and Area B at the Ex-Cell-O property. The City of Clare will need to evaluate road access opportunities and limitations for both areas in greater detail. The City of Clare will also need to work with EPA Region 5 and MDEQ to clarify the projected duration of ground water monitoring and determine whether existing monitoring wells could be relocated within Area A and Area B to optimize reuse opportunities. If the monitoring wells cannot be relocated, any future development at the property will need to be coordinated with EPA and MDEQ to ensure that the wells are adequately protected.

3. *Coordinate EPA and MDEQ activities to remove unnecessary barriers to the future use of the Ex-Cell-O property portion of the Clare Water Supply Superfund site and ensure the protectiveness of the site's remedy.*

There are several key next steps for EPA Region 5 and MDEQ. The agencies can work with the property's owners and the City of Clare to clarify potential liability concerns at the property, using tools like coordinated review of bona fide prospective purchaser requirements and comfort letters. EPA can also work to remove Area A and Area B at the Ex-Cell-O property from the Clare Water Supply Superfund site, given their status as uncontaminated areas. As discussed on page 14 of the report, EPA could use either an explanation of significant differences or a partial deletion to address these areas.

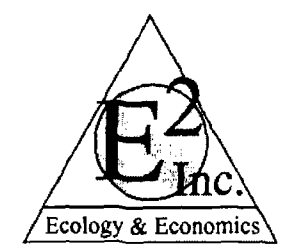
Finally, EPA and MDEQ can work with the City of Clare to clarify and update use restrictions on the containment cell at the Ex-Cell-O property to state whether recreational land uses or signage and non-invasive landscape plantings could be permitted.

EPA's next Five Year Review for the Clare Water Supply Superfund site is scheduled for September 2006. The timing of the Five Year Review could serve as an initial deadline to guide the City of Clare, EPA Region 5, and MDEQ as each party works to support the reuse of the Ex-Cell-O property and ensure the protectiveness of the site's remedy.

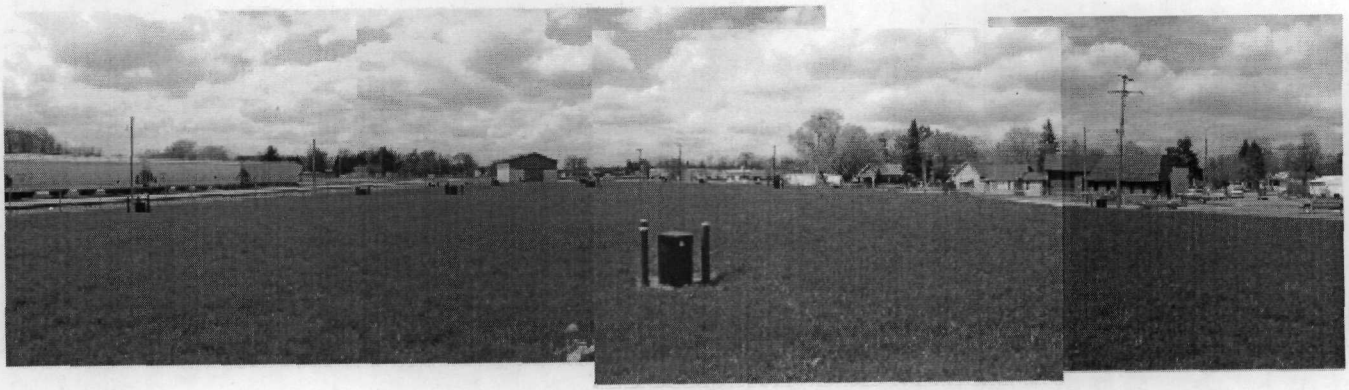
For more information, please contact:

E² Inc.
2417 Northfield Road
Charlottesville, VA 22901
T: 434.975.6700 - F: 434.975.6701

www.e2inc.com



Attachment E



Planning for the Future:

A Reuse Planning Report for the Clare Water Supply Superfund Site

November 2005

EPA Region 5
Superfund Redevelopment Initiative

City of Cla

funded by
United States Environmental Protection Agency

Est. 1879

The Clare Sentinel

75 Cents

Tuesday, August 15, 2006

Vol. 128, No. 4

Citizens vote no, 2-1, twice on millages

Terronez predicts cutting

By PHYLLIS McCROSSIN
THE CLARE SENTINEL

HARRISON – Voters in Clare County sent a clear message to commissioners in Tuesday's, Aug. 8, primary/millage election: No more taxes.

Voters rejected two ballot proposals that would have helped fund drug enforcement programs, criminal justice, parks and recreation, and farmland protection.

Residents defeated a millage request for .748 of one mill for a parks and recreation/farmland preservation proposal, which would have translated into approximately .408 mills for farmland and open space preservation; and .34 mills for parks and recreation. The millage proposal was defeated 2,950 to 1,092.

Without the millage the county's parks and recreation department will cease to exist by the end of the year, unless commissioners find a way to fund the program.

The second millage proposal for a courts and public safety millage, called for a .421 millage increase to be used for an additional judge within the county, as well as funding to hire an assistant prosecuting attorney. The millage would have also been used to fund the BAYANET program and the county's animal control program. The millage proposal was defeated 2,770 to 1,169.

"The whole thing about an election process is you get to know where the voters feeling are. They sent a clear message to commissioners that they don't want additional monies spent," Randy Terronez, Clare County administrator, said.

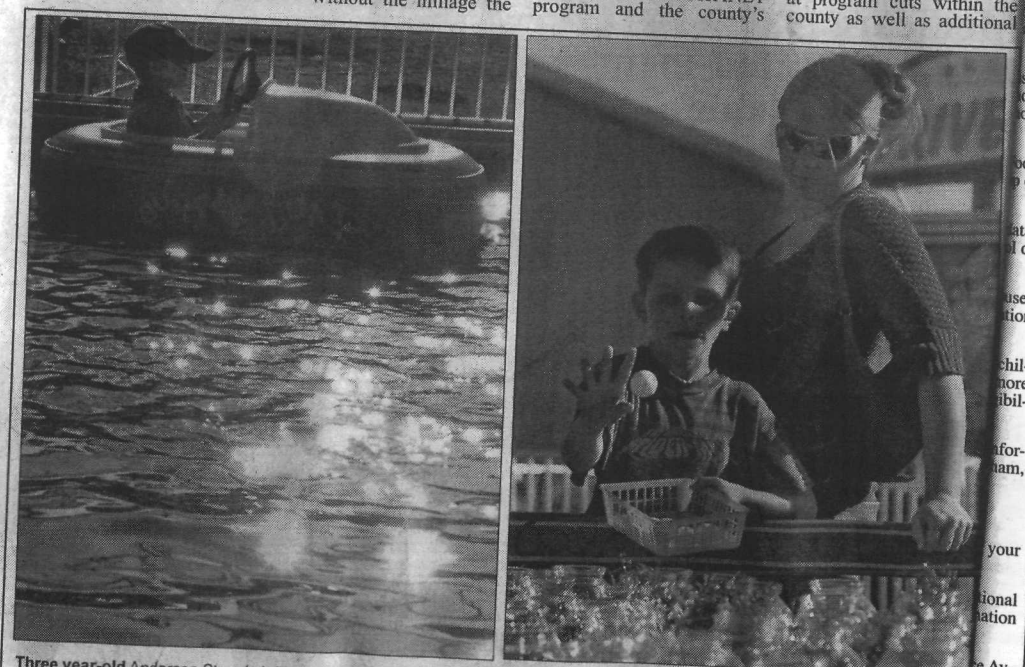
Terronez said commissioners would be looking at program cuts within the county as well as additional layoffs.

"It's going to be a tough budget year," Terronez said.

Commissioners will meet

approved by October 1st.

In the Clare County commissioner races, District 1 commissioner Jordon Lock-



Three year-old Andersen Strand , left, coasts along the sparking waters in the kids' bumper boat ride. Right, Christen Ellis watches ei[g]year-old Jonathan Mikula try his best to win a gold fish at the Clare County Fair.

THE CLARE SENTINEL / Ryan E[llis]oyer.

Board offers deal to 7 Clare teacher[s]

EPA Hosts Clare Water Supply Superfund Site Open House

Clare, Michigan Tuesday, Aug. 29, City Hall

U.S. Environmental Protection Agency invites the public to an open house on Tuesday, Aug. 29, 7-9 p.m. a the Clare City Hall, EPA, Michigan Department of Environmental quality and other representatives will be available to discuss the cleanup.

EPA and MDEQ are conducting a review of the cleanup at the Clare Water Supply Superfund site in southwest Clare. The Superfund law requires a review at least every five years at sites where cleanup action has been started and hazardous substances remain managed at the location. These reviews are done to ensure the cleanup continues to protect human health and the environment. This review will evaluate the quality and overall effectiveness of the cleanup actions, including measures taken to clean up contaminated soil and ground water and the replacement of four city of Clare municipal wells. EPA also hopes to identify actions that can be taken on formerly contaminated areas that will facilitate reuse and redevelopment. This review is scheduled to be completed by September 2006.

The five year review report will be added to the administrative record for the Clare Water Supply site, which is available to the public through the :

Garfield Memorial Library
101 E. Fourth St., Clare

Written and oral comments about the site or review process are also encouraged. Comments should be sent to the EPA staffers listed below no later than Aug. 23, 2006:

Jon Peterson
Remedial Project Manager
(312) 353-1264
peterson.jon@epa.gov

Robert Paulson
Community Involvement Coordinator
(312) 886-0272
paulson.robert@epa.gov

EPA Region 5
77 W. Jackson Blvd., Chicago, IL 60604-3590
Toll Free (800) 621-8431, 10 a.m. to 5:30 p.m. weekdays

Questions can also be directed to:

John Spielberg
Michigan Dept. of Environmental Quality
525 Allegan, Lansing, MI 48909
(517) 373-4951
spielbej@michigan.gov

ATTACHMENT F

MDEQ RECOMMENDATION FOR TRACER TEST

Tracer testing at the Mitchell site of the Clare Superfund Site, Clare, Michigan

The effectiveness of the permeable reactive barrier (PRB) wall at the Clare site is very questionable. The analytical results of the groundwater monitoring surrounding the PRB are confounding. It is unclear if the contamination downgradient from the wall has passed through the wall of if that contamination is a stagnant remnant from before the PRB was constructed. There is also the possibility that groundwater flow is simply diverted around the wall. From my perspective the best way to determine if there is indeed flow through the wall is to perform a tracer test using both the existing monitoring wells and also a few monitoring points (miniature MW clusters) specifically installed for the tracer test.

This test should be conducted by installing two injection galleries upgradient of the PRB. A different tracer would be injected into each gallery. This would help determine the degree of lateral mixing that occurs within the PRB. The locations of the injection galleries and the monitoring wells are shown in the accompanying figure.

For this test, I would recommend that a visual tracer such as fluoracine be injected into the western gallery and another visual tracer such as Rhodamine WT be injected into the second. Since the bulk groundwater velocity is not known, groundwater monitoring would be more qualitative than quantitative with the goals of determining a rough estimate of the GW velocity and demonstrating that the GW is actually passing through the PRB. Monitoring of wells 300A, MW-307, MW-308, MW-309, and MW-306 in addition to the four new monitoring well clusters, would be conducted at 1-2 week intervals for 2-3 months or would be terminated if tracer is detected earlier.

For this test the tracer would be injected by gravity feeding the solutions into the two galleries (approximately 50 gallons in each gallery). GW sampling would utilize peristaltic pumping the MWs so that the internal volume of the well has been purged and fresh groundwater is sampled. The objective is to not induce groundwater movement through sampling by pumping only the minimum of groundwater necessary to evacuate the well.

If the tracer(s) shows up only in the sidegradient well MW-309, then one could conclude that GW is avoiding the PRB and not flowing through it and the wall would need to be modified to capture GW. If the tracer compounds actually show up in the PRB wells and tracer well clusters, one could conclude that GW is passing through the wall and coupled with the analytical results, would indicate that the iron coated sand (ICS) PRB material is not entirely effective in controlling the plume.

If you have questions about this proposal, please contact me at your convenience.

Mark Henry
MDEQ Superfund Section
517 335 3390

ATTACHMENT G

MDEQ Geologist recommendations and comments on 2005 Annual Monitoring Report

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: John Spielberg
Site Evaluation Unit
Superfund Section
Remediation and Redevelopment Division

FROM: Barbara Vetort, Geologist
Geological Support Unit
Superfund Section
Remediation and Redevelopment Division

DATE: May 23, 2006

SUBJECT: Review Comments for the 2005 Annual Monitoring Report, Clare Water Supply Superfund Site, Clare County, Clare, Michigan

General Comments

I have reviewed the 2005 Annual Monitoring Report for the Clare Water Supply Superfund Site. Progressive Engineering and Construction, Inc. (Progressive) prepared this document. Progressive took over the project in early 2005, from Secor. This is Progressive's first annual monitoring report.

This report summarizes sampling for the permeable reactive barrier (PRB) wall remedial action and the groundwater sampling events. This report presents a summary of work completed in 2005. The work includes data from soil remedy dual vapor extraction system; data from the groundwater pump and treat remedy, water level measurements, and analytical results of the groundwater sampling.

The Agencies need notification in advance of the sampling events. Were the Agencies notified in advance for the May and November 2005 sampling events?

Groundwater and Soil Remedial Actions

The dual vapor extraction system and soil encapsulation area must have an inward hydraulic gradient as required in the OU2 ROD amendment. This requirement is not achieved along the southeastern edge of the soil encapsulation area.

Shallow Groundwater Elevation Contours
The figures need to have the measured water levels for the wells being contoured better labeled on the map. The groundwater elevation used to create the maps need to be legibly posted adjacent to the wells. The individual contour lines need to be labeled.

The Ex-Cell-O soil encapsulation area water levels are not correctly contoured on this shallow groundwater figures. The soil encapsulation area should be contoured separately as is the PRB wall. Further, these whole site maps are regional, and the soil encapsulation area should have an

effect on the potentiometric surface maps.

Intermediate Groundwater Elevation Contours May 2005
There is mounding present in the intermediate aquifer in 300B along the PRB walls. It should be noted that the till pinches out and is not present on these maps in the area of municipal well MW5. The intermediate and the deep should be contoured together, where there is no till present.

Deep Groundwater Elevation Contours
The figures need to have the measured water levels for the wells being contoured labeled on the map. The water level measurement date should be provided.

PRB Wall
There is no explanation presented for the water level variability in the PRB performance monitoring wells. The Michigan Department of Environmental Quality (MDEQ) Superfund staff assumes the initial May water level readings were taken directly after development and may be anomalous. The October 2005 readings must be evaluated and explained.

The PRB wall exhibits a side gradient flow along the upgradient edge of the PRB wall. The intermediate aquifer (Figure 8) has mounding along the southeastern edge of the PRB. The groundwater flow direction along the upgradient is from west to east along this upgradient wall. Likely, the groundwater is flowing around the wall and is missing the downgradient treatment from the PRB. There is a gradient along the first PRB wall that runs along the wall and around it. This is observed in all the contour maps.

Figure 13 Groundwater Elevation Contours PRB Area 5/23/05
The groundwater contours do not include well MW-307. The deeper well, MW-307 is 3.04 lower than the shallow well MW-308. The water levels indicate there is a problem at these wells. If the wells are in good communication with the aquifer, these water levels fluctuations must be explained. Evaluate the condition of the wells and determine if they are in good communication with the aquifer.

Figure 14 Groundwater Elevation Contours PRB Area 6/15/05
The groundwater contours do not include well MW-308. This well is a performance monitoring well directly adjacent to the wall. It is not recommended to ignore water levels that are inconvenient to contour. If the deeper well, MW-307, cannot be contoured properly on the figures, likely there is a problem near MW-307 and MW-308. Since the measured water levels are similar (less than 0.2 tenths of a foot different) the well should have been contoured.

Figure 15 Groundwater Elevation Contours PRB Area 7/11/05
This map is contoured incorrectly. The 842 contour line near the southeastern edge should be contoured differently and the 841 contour should have been included. The water levels demonstrate a strong southeastern gradient and SW11 was not contoured on the figures. This well is part of the performance monitoring system and should be contoured on the figures.

Figure 16 Groundwater Elevation Contours PRB Area 8/11/05
This figure appears to be contoured incorrectly. The 841.5 contour should have been extended past SW12. There is groundwater mounding and flow around the PRB.

Figure 17 Groundwater Elevation Contours PRB Area 9/14/05
This figure appears to be contoured incorrectly. The 841.0 contour should have been extended past SW12. Again, there is groundwater mounding and flow around the PRB.

Figure 18 Groundwater Elevation Contours PRB Area 10/27/2005
MW-307 had a measured water level 0.71 feet higher than the adjacent well MW-308. MW-307 water level was reported to be 842.05, versus MW-308, which had a water level measured at 841.34.

MW-307 is screened 12 to 17 feet below ground surface (bgs), and MW-308 is screened 7 to 12 feet bgs. These wells are located in backfill in the area previously excavated in 1998. There is too much variability in the water levels at this location.

Figure 19 Groundwater Elevation Contours PRB Area 11/13/05
This figure did not contour MW-307 (deeper well). MW-307 had a measured water level 1.26 feet lower than the adjacent well MW-308 (shallow well). MW-307 water level was reported to be 840.98, versus MW-308 that had a water level measured at 842.24.

Figure 20 Groundwater Elevation Contours PRB Area 12/15/05
The water levels were similar with a slight downward head, and the shallow and deep well water levels were only 0.2 feet difference.

Progressive discusses the southeastern component of flow in Section 6.1.4 of the report, however they conclude that since contaminants levels are decreasing since the PRB installation that the southeastern component of flow is not affecting the design objectives of the PRB wall. MDEQ superfund staff notes that although concentrations are decreasing this could be residual contamination, as the groundwater flows around the wall contamination may increase in wells downgradient of the new flow direction. Only wells 309 and 313 are downgradient of the new flow directions.

Contamination is increasing in wells 300B and 300C. These two wells are screened in the intermediate and deeper aquifer and are either not constructed properly to prevent vertical migration or the wells are documenting the plume moving vertically through the till.

Table 7 presents the measured water levels for the PRB performance monitoring wells. All the water levels measured for May 22 and 23, 2005 do not appear to represent actual water levels. MW-307 and MW-308 are nested monitoring wells directly downgradient of the wall.

Low Flow/Minimal Drawdown Groundwater Sampling Method Comments

The report states that samples were collected with bailers in wells with poor recharge. The wells that were sampled with the bailer are no longer screened properly for monitoring the remedy. These wells should be evaluated for rehabilitation or replacement.
The guidance recommends that the total depth be measured upon completion of sample collection. This document states that total depth is collected prior to sample collection. Measuring total depth prior to sampling can increase turbidity.

The field sampling data indicates that the low flow/minimal drawdown groundwater sampling

method was not adequately applied in the field for this sampling event. The MDEQ Superfund staff generally identified the following inadequacies:

- Field data should not have downward or upward trends for pH, temperature, and specific conductivity.
- Total depth should be measured upon completing groundwater sampling.
- Several wells had excessive water level drawdown recorded.

These sampling quality assurance problems can result in groundwater samples that are not representative of actual aquifer concentrations.

Proposed modifications to the Groundwater Sampling Program

Progressive requests modifications to the existing groundwater monitoring program. Essentially, Progressive is proposing to optimize the groundwater monitoring program. If the Agencies approve these changes, then a new Groundwater Sampling plan must be prepared. The existing groundwater sampling plan has too many modifications to be changed in the 2005 monitoring report. A new groundwater monitoring program would have to be established.

Progressive recommends more monitoring for Stanley Oil. Amanda Armbruster, MDEQ Saginaw Bay District staff, Remediation and Redevelopment Division (RRD), 989-686-8025 ext. 8309, is the state project manager for Stanley Oil. She states that Stanley Oil's consultant submitted a proposal in May 2005 to sample monitoring wells TPW-2, 7a, 7b, 14, 20, 21, 24, 28, 31, 33 on a quarterly basis. The MDEQ District staff responded and asked them to include TPW-23, 25, and 30. To Amanda's knowledge, they have not completed any groundwater sampling since October 2004.

Stanley Oil does not have a Remedial Action Plan, and the current consultant's (Dennis Gervin) approach is natural attenuation. Remedial actions to address the contamination are lacking. District staff can provide a map of the Stanley Oil monitoring wells and 2004 groundwater results.

Purge Well PRP-1

Progressive proposes modifying the groundwater remedial action by removing PRP-1 and not replacing this purge well. The intent of PRP-1 was to capture the upper aquifer (shallow) contamination as it flowed across the glacial till that pinches out nearby the extraction well. PRP-1 is intended to remove and treat contamination before it flows into the massive sand and gravel aquifer that is captured by the municipal wells.

Optimization may be more appropriate for PRP-1. The contamination concentrations have dropped off since PRP-1 began extracting groundwater. Before the remedial design is modified, the question needs to be answered- is this well intercepting the plume as expected in the design phase. It may be more appropriate to pulse the extraction well to optimize contaminant capture.

Periodic optimization of pump and treat systems can improve their effectiveness in protecting human health and the environment, speed clean up, and substantially reduce costs for operation, maintenance, and monitoring. Optimization includes changes to the system meant to enhance effectiveness, speed cleanup, and/or reduce costs. The monitoring data must be able to

demonstrate that contaminants of concern are not migrating to potential receptors, i.e., the municipal well field and that the removal of PRP-1 does not create new pathways for receptor exposure.

Recommendations

MW-312, this newly installed well deep well, needs to be gamma logged to verify the drill cuttings and characteristics logged by the driller and field geologist. Progressive notes that the Work Plan did not specify gathering split spoon or other geologic data to prepare an accurate well log. An accurate well log is required and is an industry standard; the boring was not close enough to 209 to use that well log as the basis for this log. An accurate boring log needs to be prepared for this boring and is necessary.

A tracer test for the PRB wall is necessary to demonstrate that groundwater is passing through the wall and not circumventing the eastern wall or breaking though. This will provide good information on travel time and groundwater flow characteristics.

This report requests several modifications to the groundwater sampling program. The MDEQ has previously requested, in a correspondence dated September 6, 2001, to the United States Environmental Protection Agency (USEPA), that the groundwater monitoring agreements be combined into one document for ease of review. At a minimum, a new "modified" groundwater monitoring program needs to be submitted for Agency review and approval. This memo does not approve or provide feedback on the groundwater monitoring program.

The MDEQ Superfund staff has previously requested the site data electronically. Please submit the electronic data with all future reports.

Please request USEPA provide data for the Stage rite time critical removal action (TCRA). There is no monitoring wells data or remedy evaluation provided for the Stage rite TCRA . This remedy should be evaluated on context of the Clare Water Supply Superfund site monitoring wells.

cc: Jim Heinzman, Superfund Section, RRD

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